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Sarah Collingwood
Her Book
February 6th: 1795



Sarah Colling
wood Her Book
Sarah Collingwood Book

Sarah Collingwood



*Happy the YOUTH, who are betimes set right,
 And taught the Rules of VIRTUE with delight!
 By soft Endearments Generous Minds are won,
 By rigid Doctrines very Few or None: ———*
*The CYNIC TUTOR fruitless Lectures reads,
 HE who gilds o're his Precepts best SUCCEEDS.*

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P R E F A C E.

IT would be superfluous to advance any Thing here in Recommendation of a Work, that has passed through so many Editions, and the Reputation of which has been so long established. But, as the present Edition has been carefully corrected, and very greatly enlarged, it will be necessary to give a short Account of the Methods that have been taken to improve the YOUNG MAN'S COMPANION, and render it, in some Measure, worthy of the kind Reception it has met with from the Public.

1. The whole Book has been carefully corrected, and such Additions made to the Arithmetical Part, as tended to remove every Difficulty, and make it more easy to be understood by the Learner.

2. The Letters on various Occasions are most of them new, and the Language of the others rendered conformable to that elegant Simplicity of Writing at present in Use.

3. The Art of Mensuration is very greatly improved and augmented, and the Whole delivered in so plain and conspicuous a Manner, that the meanest Capacity may easily understand it, and readily apply the Rules to actual Practice.

4. The Doctrine of Time, or what is generally called Chronology, is wholly new, and will, it is hoped, be kindly received, as no Part of this Science is found in any of the

Imitations of this Work hitherto published; though an Explanation of the Methods used in finding the Golden-Number, Epact, Dominical Letter, Easter-Day, Moon's Age, &c. cannot fail of being very agreeable to the Reader.

5. There is also added in this Edition, a particular Account of the various Globes with which the great Author of Nature has decorated the ample Fields of Space. The Sun, the Moon, the Earth, and the other Planets, together with the fixed Stars, are considered; their Distances, Magnitudes, Motions, Periods, &c. enumerated; and their Orbits, Aspects, Nature and Proportions, fully described.

6. And, because a particular Description of this terraqueous Globe is more interesting to us, than that of any other Planet, a short Treatise of Geography is added, in which the several Divisions of the Globe are fully explained; and the Religion, Manners, Customs, Arts, and Learning, of the Inhabitants of *Europe*, *Asia*, *Africa*, and *America*, fully described; together with the Nature of the Soil, Produce, Manufactures, Mountains, Lakes, Rivers, Seas, and Oceans, belonging to each of these Divisions of the Globe.

These Additions and Improvements have rendered the present much superior to any former Edition of this Work, especially, as the many Advantages it before possessed are carefully preserved. In short, the greatest Care has been taken to make the Whole as useful and instructive as possible.

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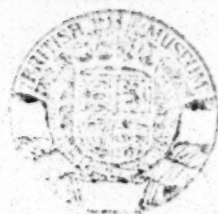
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The ALPHABET in the *Round hand & Italian.*

N. ^o	Roundh. ^d	Italian	N. ^o	Roundh. ^d	Italian
1	Aaa	Aaa	14	Nnn	Nnn
2	Bbb	Bbb	15	Ooo	Ooo
3	Ccc	Ccc	16	Ppp	Ppp
4	Ddd	Ddd	17	Qqq	Qqq
5	Eee	Eee	18	Rrr	Rrr
6	Fff	Fff	19	Sss	Sss
7	Ggg	Ggg	20	Ttt	Ttt
8	Hh	Hh	21	Uu	Uu
9	Iiü	Iiü	22	Vvv	Vvv
10	Jjy	Jjy	23	Ww	Ww
11	Kkk	Kkk	24	Xxx	Xxx
12	Lll	Lll	25	Yyy	Yyy
13	Mm	Mm	26	Zzz	Zzz

Al





*The ALPHABET in the
Roman AND Italick
CHARACTERS.*

<i>N^o</i>	Roman	<i>Italic</i>	<i>N^o</i>	Roman	<i>Italic</i>
I	A a	<i>A a</i>	XIV	N n	<i>N n</i>
II	B b	<i>B b</i>	XV	O o	<i>O o</i>
III	C c	<i>C c</i>	XVI	P p	<i>P p</i>
IV	D d	<i>D d</i>	XVII	Q q	<i>Q q</i>
V	E e	<i>E e</i>	XVIII	R r	<i>R r</i>
VI	F f	<i>F f</i>	XIX	S s	<i>S s</i>
VII	G g	<i>G g</i>	XX	T t	<i>T t</i>
VIII	H h	<i>H h</i>	XXI	U u	<i>U u</i>
IX	I i	<i>I i</i>	XXII	V v	<i>V v</i>
X	J j	<i>J j</i>	XXIII	W w	<i>W w</i>
XI	K k	<i>K k</i>	XXIV	X x	<i>X x</i>
XII	L l	<i>L l</i>	XXV	Y y	<i>Y y</i>
XIII	M m	<i>M m</i>	XXVI	Z z	<i>Z z</i>

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Moral Distichs
IN
Round hand and Italian.

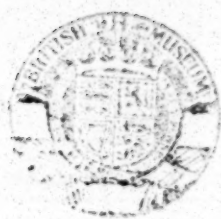
*Devotion is the soul's securest guard -
And conscious Virtue is its own reward.*

*From Science only true content can flow:
Fortis a God-like attribute to Know.*

*Beauties, like princes, from their very youth,
Are perfect strangers to the voice of Truth.*

*In beauty, the least faults conspicuous grow.
Each speck at the first glance, is seen on Snow.*





A B C D

E F G H

I K L M

N O P Q

R S T U

V X Y Z

1778



D I R E C T I O N S

For Spelling, Reading, and Writing,

T R U E E N G L I S H.

Of LETTERS *great and small, and when each are to be used; their Division into Vowels and Consonants: Of DIPHTHONGS, what they are, how many, and how pronounced and written.*



O permanent Building can be erected without a good Foundation; and therefore, whoever would attain the Accomplishment of writing all Sorts of *English Words* properly, must first endeavour to understand *Letters*, whereof all Words are composed.

These are in Number *Twenty-six*, and must be considered in their *Form*, their *Nature*, and their *Force*.

1. As to their *Form*, Letters are either *small*, as *a, b, c*, &c. or *great*, (otherwise called *Capitals*) as, *A, B, C*, &c. and to know when rightly to use the *small Letters*, and when the *Capitals*, is the first Step towards writing elegantly; and, in order to attain this, the following Rule must be observed.

You must never use great Letters in the *Middle* or *End* of any Word, unless the Whole be wrote so, as *LORD*, but in the *Beginning*; and even there only in the six fol-

B

lowing

2. *The YOUNG MAN's Companion.*

following Cases, *viz.* 1. At the Beginning of any Writing. 2. After every Period, or Full Point, when a new Sentence begins. 3. At the Beginning of every Line in Poetry, and every Verse in the Bible. 4. Proper Names of all Sorts, whether of Persons, Places, or Things, and the like, must begin with them. 5. So also must the Terms of Art, and Names of Dignities, Offices, or any other Word of special Note in a Sentence; or to which we pay a particular Deference; as *God, King, your Lordship, &c.* It was indeed the Custom formerly to begin every Substantive with a Capital; but this Practice is now generally disused. The Substantives may be known by the Signs, *a, an, or the,* before them; as *a Man, a Mouse, an Ox, an Ass, the City, the River, &c.* And, lastly, the personal Pronoun *I* must always be a Capital. The small Letters are every-where else to be used.

It would therefore be highly ridiculous to write thus :
master george franklin, the coroner of kent, with dorothy his wife, came last mARch to loNDON, where i met them.

When it should be,

Master George Franklin, the Coroner of Kent, with Dorothy his Wife, came last March to London, where I met them.

Note, There are two Forms of *s* used in Writing; the long *s*, which is always put in the Beginning, or Middle of Words; and the short *s*, which always comes at the End of Words, and sometimes after the long *s*, in the Middle of Words; as *substantial Assesment.*

Note also, That *i* and *u*, when Consonants, are written thus, *j, v*; and are really different Letters from the former.

2. As to the Nature of Letters, they are either *Vowels* or *Consonants.*

The *Vowels* are commonly counted but five, *viz. a, e, i, o, u*, but we must add to them *y*, when it cometh after a *Consonant*; which hath the Sound of *i*, as in *by, comply, &c.*

All the rest are *Consonants*, and are called so, because they have no Sound of themselves, except they are joined with a *Vowel*; and so are *j, v*, and *y*, when any of them comes before a *Vowel*; for then they are also *Consonants.*

Vowels are so called, because each of them gives a perfect Sound of itself; whereas the *Consonants* cannot be pronounced without one of the *Vowels* joined to them; as to say *b*, you must make use of the Sound *e* after it, and in *of u*, and in *m* or *s*, of *e* before them, &c.



When

When two *Vowels* come together, and are not parted in Pronunciation, but the Sound of both of them is united, it is called a *DIPHTHONG*, (a *Greek Word* signifying as double Sound) as *heard, sweet, People*, not *be-ard, swe-et, Pe-ople*.

Of these *Diphthongs*, twelve only are remarkable; that is, *ai, ei, oi, au, eu, ou, ee, oo, ea, eo, oa, and ie*, as in these Words, *Faith, either, join, Aul, Eunuch, Stout, Seed, Food, Wealth, People, Boat, Friend*.

Where you may observe, that in the first six both *Vowels* are fully sounded; but in the last one of the *Vowels* is but little or scarce at all heard; and therefore by some they are called *improper Diphthongs*.

Note, That *ay, ey, oy*, are also *Diphthongs*, and have the same Sound with *ai, ei, oi*; only *ai, ei, oi*, are used in the Beginning, or Middle of Words, *ay, ey, oy*, always in the End of Words; so we write *Air, Fair, Heifer, either, Cloister*; not *Ayr, Fayr, Heyfer, eyther, Cloyster*; but *May, Joy, Whey, &c.* not *Mai, Joi, Whai*.

Aw, ew, ow, are likewise *Diphthongs*, and have the same Sound with *au, eu, ou*; but *aw, ew, ow*, are used chiefly in the End of Words: And *ow* is sounded flat and soft, as a *Bow*, to *mo-w*; whereas *ou* is more sharp and shrill, as *thou, you, adieu*; yet, contrary to this Rule, we commonly write the following Words which have a sharp Sound with *ow*, viz. to *bow, a Cow, Flower, Fowl, how, Power, Sow, Vorwel*. Again, on the other Side we write some with *ou*, and yet pronounce them as flat as the Sound of *ow* in *know*, viz. *Four, Soul, Drought*. But certainly it is an Inconveniency, that Words under one and the same Manner of Writing should have a double and different Sound. Custom has however prevailed, and we have no Authority to attempt a Reformation.

Æ and *œ* (which have peculiar Characters, viz. *æ* and *œ*) are nor properly *English Diphthongs*, but *Latin*, and therefore in *English* we commonly both write and sound the single *e* only, as *Equity, Female, Tragedy*, from *Æquitas, Economy, Fæmina, Tragædia*; yet, in borrowed Words, rarely used, especially in proper Names, *Æneas, Ætina, &c.* the best Authors use the *Diphthongs* to denote their Original.

It must however be observed, that two *Vowels* may meet in a Word, without their forming a *Diphthong*, though

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that is generally the Case, and must be sounded jointly, except in these Words following.

Ea are parted in *Be-atitude, cre-ate, Cre-ator, Cre-ation, Gene-alogy, Oce-an, Page-ant, re-al, Serge-ant, The-atre, Venge-ance.*

Ei in *Athe-ists, Athe-ism, De-ity, Polythe-ism.*

Eo in *Dunge-on, hide-ous, Mete-or, Pige-on, Scutche-on, Surge-on, The-ory.*

Oa in *Co-action, Co-adjutor.*

Ie in *Audi-ence, Bri-er, buri-ed, busi-ed, Clothi-er, Di-er, Di-et, dri-ed, espi-ed, Gai-ety, Lai-ety, Moi-ety, Qui-et, studi-ed.*

Ui in *Ambigu-ity, Fru-ition, genu-ine, Gratu-ity, pu-issant, Perspicu-ity.*

Ee in *Pre-eminence, re-enter, re-edify.*

Oi in *do-ing and go-ing.*

Likewise most *Vowels* that come together like *Diphthongs*, are parted in all Proper Names of Persons or Places mentioned in the *Bible*; as *La-ish, Alphe-us, Cesare-a, Gibo-ab, Abino-am, &c.* but in *Cain, Cainan, Theudas, Reuben, and Beelzebub*, the *Vowels* are sounded together as *Diphthongs*.

In all such Words, where two *Vowels* come together, they are to be parted, that they may not seem to make a *Diphthong*. If you would write exactly, you ought to make this Mark (·) over the latter Vowel, which is called a *Dieresis*, or a Note of Partition; as *Läity, Capernaüm, Gileöd, &c.* Though this is now generally omitted.

There are some few Words derived from the *French*, where three *Vowels* are joined in one Sound; as *Lieutenant, Beauty, &c.* which may be called *Triphthongs*.

Note, That though the *English* Alphabet consists only of 26 Letters, and six of them *Vowels*, yet we have 21 Consonants; for *i, u, and y*, when they are set before themselves, or any other *Vowels* in the same Syllable, become Consonants. And then the two former must be written with a different Character from that which they have when *Vowels*, viz. *j* and *v* (which by learned Men and Printers are called *jod* and *ve*) as *jangle, injoin, Virtue, vulgar*, not *iangle, inioin, Uirtue, uulgar*, which would be uncouth and absurd; therefore this is carefully to be observed; but *y* having always the same Character is but one Letter, though both a *Vowel* and Consonant.

Note, That *j* Consonant hath the Sound of *g*, as in *join, angle, jingle, &c.* And

And though *y* keeps one and the same Form, yet, when it is a Consonant, it differs much from *j* Consonant, and may be perceived by these Examples — *Jet, Yet; Jew, Yew; Joke, Yoke.*

Y being originally a Greek Vowel is rightly used; 1. In most Words derived from that Tongue; as *Cryſtal, Preſbyter, Martyr, Apocrypha, Apocalypſe.* 2. *Engliſh* Words that end with the Sound of *i*, ſhould be writ with a *y*; as *Safety, Bounty*: For you muſt never end them with an *i* only; as *Bounti, Safeti*; no *Engliſh* Words terminate in that Manner. 3. When *ie* or two *i*'s come together, *y* is put in the Place of the former, becauſe it looks handſomer; as *burying, marrying*, not *burieing, marrieing*, nor *huriing, marriing*.

Of SYLLABLES, and Rules how to divide them.

IT is very neceſſary, both for true Writing and Reading, to underſtand the Nature and proper Diviſion of Syllables.

A Syllable is either a *Vowel* or *Diphthong*, ſounding by itſelf, or joined with one or more Conſonants in one Sound, and pronounced at one Breath.

For, ſince each of the five *Vowels* make a perfect Sound, any of them may be, and often is a Syllable, as *a-bate, e-very, I-vy, O-pinion, U-fury*; ſo moſt of the *Diphthongs*; as *An-ger, Eu-ſtace, Ow-ner, Ai-er, Oi-ſter, Ea-ſon.*

Many Conſonants with one Vowel may make but one Syllable; as *Length, Strength, Knight.*

Rule 1. If two *Vowels* come together in a Word, and are not a *Diphthong*, but both fully ſounded, they muſt be divided; as in *Di-et, mutu al, Tri-umph, co-eternal, co-equal.*

Rule 2. If two Conſonants of the ſame Kind happen in the Middle of a Word, they muſt be divided; as in *Ab-ba, Ac-cord, Ad-der, af-feſt, ag-gravate*, and the like.

Rule 3. A Conſonant coming between two *Vowels*, muſt be joined to the latter; as *E-qui-ty, de-li-ver*, not *Eq-uit-y, del-iv-er.*

Rule 4. Two Conſonants between two *Vowels* ſeparate themſelves, one to the former, the other to the latter Syllable; as *Siron-ger, For-tune.*

But to theſe general Rules there are the following Exceptions.

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First, *x* in any Word must be joined to the *Vowel* before it, contrary to the third Rule; as *Ox-en*, *Ex-ercise*. The Reason is, because it is a double *Consonant*, and has the Sound of *c* and *s*, which cannot begin a *Syllable*.

Secondly, Any two or three *Consonants*, which may be joined to begin an *English* Word, are not to be separated in the Middle of any Word; so you must not divide *ag-ree*, *bes-tow*, *ref-rain*, &c. but *a-gree*, *be-stow*, *re-frain*, because *gr*, *st*, and *fr*, begin several *English* Words, as in the following Example.

The two *Consonants* that may begin Words, are Thirty in Number, &c. As *bl. blunt*, *br. broad*, *Ch. Church*, *Cl. Cloak*, *Cr. Croud*, *Dr. Drink*, *dw. dwell*, *Fl. Flame*, *fr. frank*, *Gl. Glove*, *gn. gnaw*, *Gr. Grove*, *kn. know*, *Pl. Play*, *pr. pray*, *sc. scour*, *sh. shut*, *Sk. Skin*, *Sp. Sport*, *St. Stop*, *sl. slow*, *sm. smite*, *Sn. Snow*, *Sq. Squib*, *Sw. Sway*, *Th. Thunder*, *Tr. Treasure*, *tw. two*, *wh. whistle*, *wr. wrest*.

The three *Consonants* that may begin a Word are these nine, *viz.* *Sch. School*, *scr. scrape*, *shr. shrink*, *Skr. Skrew*, *spl. split*, *Spr. Spring*, *Str. Stroke*, *thr. throw*, *thw. thwart*. All these must be spelt together, and not separated, except in compounding words; and there each simple Word must retain it's own Letters. As,

<i>mis-take</i> <i>mis-like</i> <i>mis-lead</i> <i>dis-lodge</i> <i>dis-clofe</i> <i>dis-miss</i> } not <i>mi-stake</i> <i>mi-slike</i> <i>mi-slead</i> <i>di-slodge</i> <i>di-sclofe</i> <i>di-smiss</i>	<i>So trans-pose</i>, not <i>tran-spose</i>, because it is compounded of <i>trans</i>. <i>So Cramp-ring</i>, not <i>Cram-pring</i>.
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So likewise all Words that remain entire, when their Prepositions and Terminations, which of themselves signify nothing, are taken away from them, must be spelt by themselves; as *stand-ing*, not *stan-ding*, *reclaim ed*, not *reclai-med*, *unexpect-ed*, not *unexpec-ted*.

Thirdly, Any *Consonant* joined with *l* or *r* before *e*, in the End of a Word, is inseparable; as in the very Word *insepara-ble*, *tri-ste*, *Mi-tre*.

Fourthly, This Particle *es*, at the End of Words (which are commonly either *Nouns* of the *Plural* Number, or *Verbs* of the *third Person*) is generally swallowed up of the foregoing *Syllable*, and serves only to make it long; but sometimes indeed it makes a *Syllable* of itself.

Note,

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Note, A *Noun* is the Name of a Thing. A *Verb* is a Word that betokeneth to do, or to suffer, or to be. The *Singular Number* speaks but of one, the *Plural* of more. The *first Person* is when a Man speaks of himself, as *I come*. The *second* is when one speaks to another, as *Thou comest*. The *third* is spoken of, as *He comes*.

In the Words following it closes with the former Syllable.

Nouns.

Verbs.

An Hide,	<i>Hides,</i>	he <i>hides</i> himself.
A Drake,	<i>Drakes,</i>	he <i>bakes</i> Bread.
A Bile,	<i>Biles,</i>	he <i>piles</i> up Wood.
A Name,	<i>Names,</i>	he <i>names</i> me.
A Bone,	<i>Bones,</i>	he <i>mones</i> and weeps.
A Rope,	<i>Ropes,</i>	he <i>copies</i> with.
A Wire,	<i>Wires,</i>	he <i>tires</i> all Men.
A Brute,	<i>Brutes,</i>	he <i>sutes</i> well with it.
A Virtue,	<i>Virtues,</i>	he <i>argues</i> well.
But in these it may be a Syllable by itself.		
A Grace,	<i>Graces,</i>	he <i>places</i> all Things.
A Church,	<i>Churches,</i>	he <i>lurches</i> Conies.
A Cage,	<i>Cages,</i>	he <i>wages</i> War.
An Hedge,	<i>Hedges,</i>	he <i>judges</i> none.
A Rose,	<i>Roses,</i> }	he <i>teaches</i> Scholars.
A Nose,	<i>Noses,</i> }	
A Fish,	<i>Fishes,</i>	he <i>refreshes</i> himself.
A Witness,	<i>Witnesses,</i>	he <i>oppresses</i> the Poor.
A Box,	<i>Boxes,</i>	he <i>foxes</i> the Guests.
Affize,	<i>Affizes,</i>	he <i>freezes</i> for Cold.

If Nouns in *e* final take *s* after them with an Apostrophe before it, it stands for *his*, as the *Pope's Eye*, or *the Eye of the Pope*; if without an Apostrophe, it makes the plural Number, as *Popes*.

Es is also founded long in these Words, *Alo-es*, *Epitom-es*; and in all proper Names, as *Mo-ses*, *Tha-res*, *Macca bees*, except *James*.

If these Rules for dividing Syllables seem too tedious and intricate, a little Practice and Observation will render them easy and familiar: In the mean Time take this for a general Direction, *That Syllables are so to be divided in Spelling, as they are in Speaking*; and be sure if you cannot write a whole Word at the End of a Line, break it off at the End of a Syllable; as for Example, *Communi-* in one Line, and *cation* in the next, not *Communic-* in one Line,

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and *ation* in the next; so if I should write *discharge*, at the End of a Line thus, *dischar-ge*, it would be ridiculous; for, if I could not bring it all in, I ought to have left off after *dis*, and begun the next Line with the other Syllable *charge*.

Of LETTERS that ought to be written, and yet are not founded, and the Reasons thereof; particularly of *e* at the End of a Word, when it must, and when it should not be written.

IN the Words *Isaac*, *Caiphas*, *Canaanite*, *Sabaoth*, and *Pharaoh*, one of the *a*'s is not pronounced, they being originally *Hebrew*.

B in Words of one Syllable is not founded, as in *Lamb*, *climb*, *Comb*, *dumb*, *Tomb*, *Womb*, *Thumb*, *Debt*, *Debtor*, *Doubt*: But as if written, *Lam*, *clim*, *Com*, *dum*, *Tom*, *Wom*, *Thum*, *Det*, *Detor*, *Dout*.

And *c* is not founded in *indict*, *Indictment*, *indicted*. Nor *d* in *Wednesday*. Nor *e* in the Middle of the Word *George*. And *e* at the End of the Word is very seldom founded, except in those of one Syllable, as *me*, *be*, *the*, *he*, *ye*, *we*, where it has the Sound of a Diphthong, or *ee*. And in Words derived from the *Hebrew* and *Greek*, as *Jesse*, *Jubile*, *Mamre*, *Ninive*, *Candace*, *Cloe*, *Daphne*, *Gethsemane*, *Penelope*, *Epitome*, *Catastrophe*, &c.

In other Words where *e* is put at the End, and the Sound not heard, yet it is not superfluous, nor to be omitted in Writing, for these following Reasons:

1. It serves to make the Syllable long, which without it must be sounded short, and so several Words of different Senses would be confounded, which, by this Means, are plainly distinguished; as appears by these Examples.

To curse and ban is Children's Bane.

A Hedger's Bill is no fit Instrument wherewith to launce a Bile.

You may bite one Bit of my Apple.

I did bathe myself in a Bath.

I can break this Japan Cane.

A scolding Dame deserves to be duck'd in the Mill-dam.

Meat that is fetched far is Ladies Fare.

A Piece of Fir is good for the Fire.

I am out of the Hope to have one Hop this Year.

They

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They say a Cat hath nine Lives, but to be sure she will live as long as she can see me alive.

Bad Usage hath made many a Man mad.

Let the Man cut my Horse's Mane.

'Tis a Mile to the next Mill.

I will quit and discharge you quite of that Debt.

To rid the Way, let's ride the faster.

The Poor will scrape up every Scrap.

I cannot stare all Night at a Star.

For a new Tune I got a Tun of Wine.

Oft-times one Twin doth twine about the other.

For a Pint of Wine you do not win.

Are you not ashamed to whine for a Scratch with a Whin, or a Furze Bush?

I will write to my Lawyer for a Writ.

Yet these following Words seem privileged by Custom, to be pronounced long without an *e* final, viz. *bold, cold, hast, Post, told, Scold, Bolt, Colt, Dolt, most, Ghost, both, Ruth*: But in other Words it is a Self-contradiction to add an *e* in the End, which makes a Syllable long, after I have made it short with two Consonants; and therefore I must write *pass, turn, black*, not *passé, turne, blacke*.

2. Another Reason for writing *e* final, when not sounded, is to soften the Sound of these two Letters *c* and *g*; as in *Ace, Place, Lice, Truce, Justice*; whereas otherwise *c* sounds strong like *k*, as in *ac-cept, ac-count*; and the like of *g*, as in *Stag and Stage, hug and huge, sewing and sewinge, String and Fringe*.

And here note, That, if *g* be hard with a long Vowel, *ue* is added, and always pronounced in the same Syllable; as *Plague, Rogue, Prague, the Hague, Intrigue, Catalogue, Dialogue, Prologue, Epilogue, Synagogue, colloque, prorogue, League, Tongue*. Beware you do not read such Words *Catalogue, Intri-gue*, nor write them *Catalog, Prolog, &c.*

But if *g* be short, with a short Vowel, then it must have *d* before it; as in *Badge, Ledge, Bridge, lodge, judge*; which Words are thereby distinguished, both in Sound and Writing, from *Bag, Leg, Log, Jug*.

3. Another Use of *e* at the End of Words is for Ornament rather than Necessity; for we add it to Words ending in *i, o, or u*, as *Virtue, Foe*, where it does not vary the Sound. Likewise in Nouns and Verbs singular it is generally added after the long *s*, joined with another Consonant;

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as *Horse*, *Curse*, to *nurse*, *disburse*; for we do not write *Hors*, *Curs*, *disburs*; and I take the Reason to be partly, because those Words are ~~thereby~~ the more readily varied, as *Nurs*, *Nurses*; *Curse*, *Curses*; ~~disburse~~, *disburses*: And especially because the short *s* after *r*, without an *e*, makes a soft Sound, as *Wars*.

If to the *e* at the End of a Word a Termination be added, the *e* is lost, and must be omitted in Writing, as *love*, *loving*, not *loveing*; except these Endings *ge* and *ce* before *able*, as *Change*, *change-able*, *Peace*, *peace-able*, not *chang-able*, *peac-able*.

It is needless to use *e* at the End of a Syllable already made long by a Diphthong, and therefore you must write *gnaw*, *Fear*, *Weight*, not *gnawe*, *Feare*, *Weighte*; except when it is to give a right Sound to soft *s*, soft *th*, and to these Endings, *ce*, *ge*, *ve*; as *please*, *soothe*, *Peace*, *Siege*, *Leave*.

Words of one short Syllable, ending with a Consonant, are to be written with a single Consonant, and without any *e* after; as *Sin*, *Son*, *Sun*, *at*, *put*, *War*, not *Sinne*, *Sonne*, *Sunne*, &c. tho' such Words appear in our old *Bibles*, and also in the Plural, *Sinnes*, *Sonnes*, &c. But this is reformed in our latter Impressions.

G is not sounded, tho' written in *sign* and its Compositions, *assign*, *resign*, *Design*, *consign*; nor in *Seignior*, *Bagnio*, *Seraglio*, *reign*, *Sovereign*, *arraign*, *Phlegm*, and the like.

H has a Place, but no Sound, in *Authority*, *Christ*, *Christopher*, *Chrystal*, *Chrysostom*, *Chronicle*, *Chronology*, *Chronography*, *Ghost*, *John*, *Rhine*, *Rhenish*, *Rhetoric*, *Schedule*, *Schism*, and *Thomas*.

I is not much, if at all, sounded in these Words, *adieu*, *Juice*, *Pursuit*, *Bruit*, *Fruit*, *Suit*, *Bruise*; yet in the five last it makes the Syllable long.

K is not heard in *Back*, *Deck*, *sick*, *Rock*, *suck*, &c. For the *Latins* make the same Sound with *c* alone; as *Lac*, *nec*, *dic*, *hoc*, *dic*; and our best Authors now write such Words, when deduced from the Greek or Latin, in *cus*, with *c* only, as *public*, *Physic*, *Catholic*. But if the Word come from the Latin, ending in *quus*, you must write *que*, as *oblique* of *obliquus*, *Relique* of *Reliquus*, *antique* of *antiquus*.

N is not pronounced in *solemn*, *Hymn*, *Autumn*, *Column*,
condemn,

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condemn, &c. yet ought to be written, because it shews whence they are deduced.

O is not sounded in *People*, *Jeopardy*, &c. nor in the End of *righteous*, *glorious*, *frivolous*, and the like.

Nor *s* in the Words, *Isle*, *Viscount*, *Island*.

U is written many Times after *g*, when it has no Sound, as *Guide*, *Guardian*, &c. and always after *q*; as in *Queen*, *quick*, and the like. In the Words, *buy*, *built*, *Conduit*, *Circuit*, it is also silent; and the same in *Labour*, *Favour*, *Honour*, and other Words of like Termination.

I have been longer upon this Rule, that the young Learner may have full and plain Instruction in relation to the true Knowledge of the Sound of those Letters which ought to be written; and particularly the Letter *e*, which, tho' the second *Vowel*, affords more Variety of Instruction than any of the other: So that by following carefully the Observations I have made, the Learner will know when the significant Letter must, or must not, be written at the End of a Word.

Of LETTERS sounding alike, and how to avoid Mistakes in Writing one for the other.

C and *k* have great Affinity in Sound; but to distinguish when you ought to use one, and where the other, Observe,

That *c* hath the Force of *k* only before *a*, *o*, *oo*, *n*, and these two Consonants *l* and *r*. And therefore you must write, *Care*, *Cow*, *Cooper*, *Cupboard*, *Clergy*, *Crown*; not *Kare*, *Kow*, *Kooper*, *Kupboard*, *Klergy*, *Krown*. But before *e* and *i*, *c* has commonly the Sound of *s*; as *Cesar*, *Cicero*, not *Kesar*, *Kicero*. And the Use of *k* is only before *e*, *i*, and *n*; as *Key*, *keep*, *kill*, *Knight*; not *Cey*, *ccep*, *cill*, *Cnight*. And for this Reason too we ought to write *Calendar*, *Catharine*, *Catholic*; not *Kalendar*, *Katharine*, *Katholic*, although the two last are from Greek Words written with *Kappa*.

In short Syllables you must write *c* before *k*, if a Vowel goes before, as *Buck*, *thick*, *Stick*, and the Reason is mentioned a little before, *viz.* because *k* is never doubled; but, if a Consonant come before *k*, there is then no Need of *c*, as *Banks*, *Barks*; not *Bancks*, *Barcks*.

C is to be written after *x*, in some Words derived from the *Latin*, as *exceed*, *excel*, *excessive*; not *exceed*, *exel*.

Ch in mere *English* Words, or such as are derived from the *French* and *Latin*, sounds *chee*, as in *Approach*, *Charity*; and if the Syllable be pronounced short, you must write *t* before the *ch*; as *Catch*, *Wretch*, *Scutcheon*. But, in the following Words borrowed from *Hebrew* and *Greek*, *ch* has the Sound of *k*; as in *Character*, *Malachi*, *Antioch*, *Eucharist*, *Anchor*, *Chios*, *Chusbite*, *Achan*, *Malchus*, *Melchizedec*, *Baruch*; and must be read as if they were wrote *Karakter*, *Akan*, *Antiok*, *Baruk*, &c.

And the same in all other like Words, except these, *Rachel*, (not *Rakel*) *Cherubim*, *Tychius*, (not *Tyckicus*) *Archbishop*; *Archduke*; yet these two Words, *Architeet* and *Archangel*, are pronounced as if they were spelt *Arkiteet*, *Arkangel*; and the Reason I conceive is, because in the two last a Vowel, but in the former a Consonant follows.

F and *ph* will not be mistaken, if it be remembered that the first is used in all *English* Words, as *Face*, *find*, &c. the latter in these few following, derived of the *Greek* and *Hebrew*.

Phalanx,	Phænomenon,	Phlebotomy,	Phlegm,
Pharaoh,	Philtre,	Phrenetick,	Triumph,
Pharisee,	Philistines,	Physic,	not
Phares,	Philosophy,	Physician,	Triumf.
Phoenix,	Phrensy,	Physiology.	

Beware therefore of writing these Words with an *f*, for it would be equally as absurd to see *Filosophy*, *Fysician*, for *Phylosophy*, *Physician*, as it would be to behold *Phastening*, *phind*, *Phigure*, instead of *Fastening*, *find*, *Figure*.

Gh in the End of some few Words, where *au* or *ou* goes before, has the Sound of *f*, as *laugh*, *cough*, *tough*, *enough*; yet have a Care you do not make your Readers Sport, by writing *lassf*, *coff*, *tuff*, and *enuff*; because Custom has not yet allowed thereof; yet *cuff*, *Snuff*, *huff*, *Buff*, &c. must be so written.

G before *e* and *i* is sounded soft like *j* Consonant, as *Agent*, *George*, *Gentle*, *Gem*, *Generosity*, *Generation*, *Gender*, *Genealogy*, *Geometry*, *Gesture*, *Giant*, *Ginger*, *Gipsy*, *imagine*; do not play the Fool and write, *Ajent*, *Jeneration*, *Jinger*, &c. Yet we must write *Ajax*, *January*, *Janizaries*, *jealous*, *John*, *jeer*; not *gealous*, *Gohn*, *geer*.

C has

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C has many Times the Sound of *s*; to distinguish these, observe the following Rules:

1. You must write *c* before *e* or *i*, as in *accept*, *special*, *Circumcision*, *exceed*, being Words derived from the Latin, where *c* must be retained.

2. Words that end with the Sound of *ace*, *ece*, *ice*, *uce*, are generally wrote with *c*, as *Mace*, *Piece*, *Lice*, *induce*. So also Words in *ance*, *ence*, *ince*, *once*, *unce*, *ancy*, or *ency*; as *Countenance*, *Prudence*, *Quince*, *Sconce*, *Dunce*, *Lieutenancy*, *Continency*; not *Countenans*, *Continensy*, or the like. Except out of this Rule these Words:

Abase,	To advise,	Frankincense,	Rinse,
Cafe,	Hypocrisy,	Incense,	Sins,
Base,	Paradise,	To advertise,	Pens,
Chafe,	Promise,	Mittins,	Sense.

3. Words ending in the Sound of *ose*, *use*, (long) must be wrote with *s*, as *Hose*, *Nose*, *abuse*, *chuse*.

4. *C* sounds like a soft *s*, in these Words, *sacrifice*, *suffice*; and in *Gloucester* and *Worcester* the *ce* is not at all sounded in common Speech, yet must not be left out in Writing.

5. As for the Beginning of Words, these following, tho' they have the Sound of *s*, yet must be written with *c*.

Cease	Censure	Cistern	Cite, and its
Ceilings	Circumstance	Cider	Compounds.
Celebrate	Circumference	Cinque	Excite
Celerity	Censor	Cinnamon	Recite, &c.
Celestial	Centre	Cypher	Civil
Cell	Centurion	Circle	Civet
Cellar	Ceremony	Circuit	Cymbal
Cement	Certain	Citron	Cypress.
Censer	Certify	City	

All other Words, (as near as I can remember) of that Sound, must begin with *s*, as *Sach*, *Senate*, *Job*, *Sum*, &c.

6. There are seven Words (I can think of no more at present) beginning with *sce*, *sci*, *sche*, and *schi*, which ought to be taken Notice of to prevent their being written wrong, as they seem to sound with an *s* only; and they are, *Scene*, *Scepter*, *Schedule*, *Schism*, *Science*, *Sciatica*, *Scythians*; which you must read as if they were wrote, *Sene*, *Septer*, *Sedule*; yet *Scheme* and *Skeleton* are always sounded as *Skeme*, *Skeleton*; so *Scarcity*, *Scholar*, *Scrivener*, &c.

Ti,

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Ti, before a Vowel, generally sounds like *fi*, as *Patience*, *Dictionary*, except when *f* goes before, as *Fustian*, *Combustion*. And except the Word *tied*, and whenever a Word ending in *ty* hath another Syllable added to it that begins with a Vowel, as from *Plenty*, *Plentious* ; *Mighty*, *Mightier*.

Therefore since the same Sound is frequently to be expressed by *ti*, and sometimes by *fi*, especially in the End of Words, it will be worth while to understand them, and where properly to use each, and the Reason thereof. For your Guidance herein, observe these Directions.

1. Generally, you must write *ti*, not *fi*, in Words that end with the Sound of *ation*, *etion*, *ition*, *otion*, *ution*, as *Education*, *Completion*, *Contrition*, *Motion*, *Constitution* ; as also, in those that end in *action*, *ection*, *iction*, as *Faction*, *Resurrection*, *Contradiction* ; except where there is a double *s*, as *Passion*, or an *sh*, as *Cushion*, *Fashion* ; not *Cution*, *Fation*. But more particularly,

2. You are to know, that the Reason of the different Writing of such-like sounding Words is this ; they are all originally *Latin* Verbals derived from the first Supine, which if it end in *tum*, then you write *ti* ; if in *sum*, then *fi*. However, because all People are not acquainted with *Supines*, I shall here set down the Words of both Sorts that most frequently occur.

These are to be written with t.

Action	Injunction
Ambition	Motion
Apparition	Munition
Attention	Nation
Benediction	Notion
Compunction	Oblation
Concoction	Obligation
Contention	Perdition
Declamation	Perturbation
Dissention	Relation
Distribution	Sanction
Exclamation	Toleration
Faction	Vacation
Fruition	Vocation

These with f.

Admission	Descension.
Allusion	Diversion.
Apprehension	Effusion
Ascension	Evasion.
Asperision	Invasion.
Aversion	Occasion
Circumcision	Permission.
Commission	Submission.
Confusion	Vision
Dismission	

And the like of any others where there is the same Reason.

To which you may add, *Grafier*, *Brasier*, *Visier*.

A TABLE of Words, the same, or nearly alike in Sound,
but different in Signification.

A BEL, Cain's Brother
A Bell, of Metal

Able, powerful

Accidence, a Book

Accidents, Chances

Account, Esteem

Accompt, Reckoning

Achor, a Valley

Acre, of Land

Advice, Counsel

Advise, to counsel

Alle, Malt Liquor

All, every one

Awl, to bore Holes

Ale-hoof, an Herb

Alcof, at a Distance

Allay, to give Ease

Alley, of Metal

Alley, a narrow Passage

Ally, a Confederate

A Lye, a Falsity

Allow'd, granted

Aloud, noisy

Altar, for Sacrifice

Alter, to change

Amifs, wrong

A Mifs, a Whore

Ant, a Pismire

Aunt, Father's Sister

A Peal, Ringing

Appeal, to higher Powers

A Peer, a Lord

Appear, to be seen

Air, Wind

Are, they are

Aray, good Order

Array, to cloath

A Rose, to smell to

Arose, did rise

Arrant, notorious

Errand, a Message

Arrafs, Hangings

Arrows, to shoot

Harrafs, to trouble

A Scent, Smell

Ascent, going up

Assent, Agreement

Assistance, Help

Assistants, Helpers

Augur, a Soothsayer

Augre, for Carpenters

Axe, to cut Wood

Acts, of Parliament

Babel, the Tower

Babble, to prate

Bacon, Hog's Flesh

Beckon, to call by Signs

Bail, a Surety

Bale, of Cloth or Silk

Bald, without Hair

Bawl'd, cry'd out aloud

Ball, a round Substance

Bawl, to cry aloud

Barbara, a Woman

Barbary, a Country

Barberry, Fruit

Bare, naked

Bear, a wild Beast

Barrister, at Law

Barretor, a Disturber

Bas, a Part of Musick

Base, mean or wicked

Baiz, Cloth

Bays, Bay Trees

Be, are

Bee, with Honey

Belly, Part of the Body

Belie, to speak falsely

Beer,

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Beer, Malt Liquor
Bier, to carry the Dead
Bel, an Idol
Bell, to ring
Berry, a small Fruit
Bury, to inter
Blew, did blow
Blue, a Colour
Board, a Plank
Bor'd, a Hole
Boar, a Beast
Boor, a Country Fellow
Bore, to make a Hole
Bold, impudent
Bowl'd, cast as a Bowl
Bolt, of the Door
Boult, in the Mill
Bow, to bend
Bough, a Branch
Boy, a Lad
Buoy, to bear up
Bread, to eat
Bred, brought up
Breeches, to wear
Breaches, broken Places
Burrow, for Conies
Borough, a Corporation
By, near
Buy, to purchase
Brews, he breweth
Bruise, to break
Brewis, Fat
Caen, in Normandy
Cain, the Murderer
Cane, a Shrub
Calais, in France
Chalice, a Cup
Call, a Name
Cawl, of a Perriwig
Cannon, a Gun
Canon, a Rule
Capital, chief
Capitol, a Tower in Rome

Career, full Speed
Carrier, that carrieth
Cellar, for Liquors
Seller, of Goods
Censer, for Incense
Censor, a Reformer
Censure, Judgment
Century, 100 Years
Centry, a Guard
Chair, to sit in.
Chare, a Jobb of Work
Champaigne, in France
Campaign, a Summer's War
Choler, Rage
Collar, for the Neck
Collar, of Brawn
Cieling, of a Room
Sealing, setting a Seal
Cittern, an Instrument
Citron, a Fruit
Clark, of a Parish
Clerk, a Clergyman
Clause, of a Sentence
Claws, of a Bird or Beast
Comb, for the Hair
Come, remove hither
Comet, a blazing Star
Commit, to do
Common, publick
Commune, to converse
Condemn, to Death
Contemn, to despise
Council, an Assembly
Counsel, Advice
Cou'd, was able
Cud, of Cattle
Courant, a Messenger
Current, passable
Creek, of the Sea
Crick, in the Neck
Cousin, by Relation
Cozen, to cheat
Cymbal, an Instrument

Symbol,

Symbol, a Mark
 Cypress, a Tree
 Cyprus, an Island
 Cruse, a little Vessel
 Cruise, by the Sea Coast
 Cygnet, a young Swan
 Signet, a Seal
 Daign, to vouchsafe
 Dane, of Denmark
 Dam, to stop
 Damn, to condemn
 Dear, of great Value
 Deer, in a Park
 Deceased, dead
 Diseased, sick
 Decent, becoming
 Descent, going down
 Dissent, to disagree
 Deep, low in the Earth
 Diep, a Town of France
 Defer, to put off
 Differ, to disagree
 Derbe, a City in Asia
 Derby, in England
 Desert, Merit
 Desart, Wilderness
 Dew, from Heaven
 Due, a Debt
 Do, to make
 Doe, a female Deer
 Dough, Paste of Leaven
 Done, acted
 Don, a Spanish Lord
 Dun, Colour
 Devices, Inventions
 Devizes, a Town
 Doer, that doth
 Door, of an House
 Dragon, a Beast
 Dragoon, a Soldier
 Draught, of Drink
 Drought, a Dryness
 Ear, of the Head

E'er, ever
 Year, twelve Months
 Earth, the Ground
 Hearth, of a Chimney
 Easter, a Feast
 Esther, a Woman
 Eaten, devoured
 Eaton, a Town's Name
 Eminent, famous
 Imminent, over-head
 Enow, in Number
 Enough, in Quantity
 Enter, go in
 Interr, to bury
 Entire, whole
 Envy, Hatred
 Envoy, a Messenger
 Exercise, Labour
 Exorcise, to conjure
 Extant, in being
 Extent, Distance
 Fain, desirous
 Feign, to dissemble
 Faint, weary
 Feint, a false March
 Fair, comely
 Fare, a customary Hire
 Feed, to eat
 Fee'd, rewarded
 Fellow, a Whitlow
 Felon, a Criminal
 Figure, Shape
 Vigour, Strength
 File, of Metal
 Foil, to overcome
 Filip, with a Finger
 Philip, a Man's Name
 Fir, Wood
 Furr, of a Skin
 Floor, of a Room
 Flower, of the Field
 Follow, to come after
 Fallow, Ground untill'd

Forth,

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Forth, abroad
Fourth, in Number
Foul, nasty
Fowl, a Bird
Form, to sit on
Form, Shape
Francis, a Man's Name
Frances, a Woman's Name
Frays, Quarrels
Froise, fry'd Meat
Gall, bitter Substance
Gaul, a Frenchman
Garden, of Herbs
Guardian, Overseer
Genteel, graceful
Gentile, Heathen
Gentle, quiet
Gesture, Carriage
Jester, a merry Fellow
Gilt, with Gold
Guilt, of Sin
Glutinous, sticking
Gluttenous, greedy
Grate, for Coals
Great, large
Grater, for Nutmeg
Greater, larger
Greave, a Boot
Grieve, to lament
Grays, a Town
Graze, to eat Grass
Groan, to sigh
Grown, increased
Grot, a Cave
Groat, four Pence
Hail, to salute
Hale, to draw along
Hare, in the Field
Hair, of the Head
Harsh, cruel
Hash, to mince Meat
Hart, a Beast
Heart, the Seat of Life

Haven, a Harbour
Heaven, Happiness
Herd, of Cattle
Heard, did hear
Hard, difficult
Here, in this Place
Hear, to hearken
Hie, to make Haste
High, lofty
Hoy, a Ship
Him, that Man
Hymn, a Song
Hire, Wages
Higher, more high
His, of him
Hiss, to deride
Hoar, Frost
Whore, a lewd Woman
Hole, Hollowness
Whole, perfect
Ho ! ho ! to call
Hallow, to make holy
Hollow, empty
Holy, pious
Wholly, entirely
Home, a Dwelling-Place
Whom ? What Man
Holm, a Sort of Oak
Hoop, for a Tub
Whoop, to cry out
Hue, Colour
Hew, to cut
Hugh, a Man's Name
I, myself
Eye, to see with
Idle, lazy
Idol, an Image
I'll, I will
Isle, an Island
Oyl, of Olives
Employ, Work
Imply, to signify
In, within

Inn, for Travellers
Incite, to stir up
Infight, Knowledge
Ingenious, of quick Parts
Ingenuous, candid
Ketch, a Ship
Catch, to lay hold of
Kill, to murder
Kiln, for Bricks
Kind, good-natur'd
Coin'd, at the Mint
Knave, a Cheat
Nave, a Cart Wheel
Knight, by Honour
Night, the Evening
Lade, the Water
Laid, plac'd
Lain, did lie
Lane, a narrow Passage
Latin, old Roman
Latten, Tin
Lattice, of a Window
Letice, Woman's Name
Lettuce, an Herb
Lease, a Demise
Leash, three
Lees, Dregs of Wine
Leper, one leprous
Leaper, that leapeth
Lessen, to make less
Lesson, a Reading
Least, smallest
Lest, for Fear
Lethargy, Sleepiness
Liturgy, Common Prayer
Lier, in wait
Lyar, a Teller of Lyes
Limb, a Member
Limn, to paint
Line, Length
Loin, of Veal
Lo, behold
Low, humble

Lose, to suffer Loss
Loose, to let go
Lower, to let down
Lowr, to frown
Made, finished
Maid, a young Woman
Main, the chief Thing
Mane, of a Beast
Male, the He
Mail, Armour
Manner, Custom
Manor, a Lordship
Market, for Traffick
Mark it, mind that
Marsh, watery Grounds
Mash, the Hole of a Net
Martin, a Man's Name
Marten, a Bird
Mead, a Meadow
Mede, one of Media
Mean, of low Value
Mein, Carriage
Meat, to eat
Mete, to measure
Message, Business
Messuage, an House
Mews, for Hawks
Muse, to meditate
Mighty, powerful
Moiety, half
Mile, by Measure
Moil, to labour
Mite, small Money
Might, Strength
Might, he could
Moat, a Ditch
Mote, in the Eye
More, in Quantity
Mower, that mows
Moor, barren Ground
Moor, a Blackamoor
Morter, made of Lime
Mortar, to pound in

Naught,

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<i>Naught</i> , bad	<i>Pique</i> , a Quarrel
<i>Nought</i> , nothing	<i>Pint</i> , half a Quart
<i>Nay</i> , not	<i>Point</i> , a Stop
<i>Neigh</i> , as a Horse	<i>Place</i> , of Abode
<i>Neither</i> , lower	<i>Plaise</i> , a Fish
<i>Neither</i> , none of the two	<i>Plow</i> , to make a Furrow
<i>Nice</i> , curious	<i>Plough</i> , to plow with
<i>Niſe</i> , Clamour	<i>Pole</i> , a long Stick
<i>Nigh</i> , near	<i>Poll</i> , to cut the Hair
<i>Nye</i> , a Sirname	<i>Pore</i> , of the Skin
<i>Not</i> , denying	<i>Poor</i> , beggarly
<i>Knot</i> , to untie	<i>Posy</i> , of Flowers
<i>Oar</i> , of a Boat	<i>Poeſy</i> , Poetry
<i>O'er</i> , over	<i>Pour</i> , to empty
<i>Ore</i> , of Metal	<i>Power</i> , Might
<i>Of</i> , belonging to	<i>Practiſe</i> , to exerciſe
<i>Off</i> , at a Diſtance	<i>Practice</i> , Exerciſe
<i>Ob</i> , alas	<i>Pray</i> , to beſeech
<i>Owe</i> , to be indebted	<i>Prey</i> , a Booty
<i>Own</i> , to acknowledge	<i>Preſence</i> , being here
<i>Own</i> , as his own	<i>Presents</i> , Gifts
<i>Order</i> , Rank	<i>Presents</i> , he gives
<i>Ordure</i> , Filth	<i>Princes</i> , King's Sons
<i>Our</i> , of us	<i>Princeſs</i> , King's Daughter
<i>Hour</i> , ſixty Minutes	<i>Principal</i> , Chief
<i>Palate</i> , of the Mouth	<i>Principle</i> , the firſt Rule
<i>Pallet</i> , a little Bed	<i>Proſit</i> , Advantage
<i>Pale</i> , Colour	<i>Prophet</i> , a Foreteller
<i>Pail</i> , a Veſſel	<i>Prophecy</i> , Foretelling
<i>Pall</i> , a Funeral Cloth	<i>Propheſy</i> , to foretell
<i>Paul</i> , a Man's Name	<i>Quire</i> , of Paper
<i>Paraſite</i> , a Flatterer	<i>Choir</i> , of Singers
<i>Parricide</i> , a Murderer	<i>Rack</i> , to torment
<i>Parſon</i> , of a Pariſh	<i>Wreck</i> , of a Ship
<i>Perſon</i> , ſomebody	<i>Rain</i> , Water
<i>Peal</i> , upon the Bells	<i>Reign</i> , rule as a King
<i>Peel</i> , the Outſide	<i>Rein</i> , of a Bridle
<i>Pear</i> , a Fruit	<i>Raiſe</i> , to ſet up
<i>Pair</i> , a Couple	<i>Rays</i> , Sun Beams
<i>Pare</i> , to cut	<i>Race</i> , to run
<i>Peter</i> , a Man's Name,	<i>Raſe</i> , to demolish
<i>Petre</i> , Salt	<i>Red</i> , a Colour
<i>Pick</i> , to chuſe	<i>Read</i> , did read

Reed, a Shrub
Read, in a Book
Relick, a Remainder
Relict, a Widow
Rere, the back Part
Rear, to erect
Rhyme or *Rhythm*, in Verse
Rime, a freezing Mist
Rice, Indian Corn
Rife, Advancement
Rie, Corn
Rye, in Suffex
Wry, crooked
Ring, the Bells
Wring, the Hands
Rite remony
Ri just and true
Ri ot, a working Smith
te, with a Pen
de, did ride
ad, the Highway
ow'd, did row
oe, a Kind of Deer
ow, a Rank
ome, a City
Room, Part of a House
Rete, by Heart
Wrote, did write
Wrought, work'd
Rough, not smooth
Rust, a Band
Roof, Top of a House
Sail, of a Ship
Sale, Bargaining
Satiety, Fullness
Society, Company
Saviour, that saveth
Savour, Sme'l
Savor, a Taste
Scene, of the Stage
Seen, beheld
Seas, great Waters
Seize, to lay hold of

Cease, to leave off
Sent, ordered away
Scent, a Smell
Shew, to make appear
Shoe, for the Foot
Show, a Sight
Ship, for Sailing
Sheep, a Beast
Shore, the Sea-Coast
Sewer, the Common Sewer
Shewn, did shew
Shone, did shine
Shread, to mince
Shred, minced
Sign, a Token
Sine, in Geometry
Site, Situation
Cite, to summon
Sight, Seeing
Sink, to go down
Cinque, five
Slight, to despise
Sleight, Dexterity
Sloe, a four Fruit
Slow, tardy
Slough, a Puddle
Soal, of a Shoe
Soul, of a Man
Sole, a Fish
Some, a Part
Sum, the Whole
Son, a Male Child
Sun, the heavenly Light
Soon, quickly
Swoon, to faint
Sore, an Ulcer
Soar, to mount upward
Stare, to look earnestly
Stair, a Step
Stear, a young Bullock
Steer, to guide a Ship
Stile, for Passage
Style, of Writing

Stood,

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Stood, did stand
Stud, an Embossment
Straight, not crooked
Strait, narrow
Succour, Help
Sucker, a young Twig
Sue, to make Suit
Sew, with a Needle
Tail, the End
Tale, a Story
Tame, not wild
Thame, a Town
Tare, Weight allowed
Tear, to rend in Pieces
Than, in Comparison
Then, at that Time
There, in that Place
Their, of them
Through, thorough
Throw, to cast
Throne, Seat of State
Thrown, cast
Tie, to make fast
Toy, a Play-Thing
Tide, Flux of the Sea
Ty'd, made fast
Tile, for Covering
Toil, to take Pains
Time, when
Thyme, an Herb
To, unto
Toe, of the Foot
Tow, to draw along
Too, likewise
Two, a Couple
Told, as a Tale
Toll'd, as a Bell
Tongs, for the Fire
Tongues, Languages
Towr, to hang in Sight
Tower, of Defence
Tuscan, Order
Tuskin, a great Tooth

Vacation, Ceasing
Vocation, a Calling
Veil, a Covering
Veal, Calf's Flesh
Vale, a Valley
Vain, uselefs
Vane, to shew the Wind
Vein, of the Blood
Valley, a Dale
Value, Worth
Volley, of Shot
Vassal, a Slave
Vessel, for Use
Vial, or *Phial*, a Glas
Viol, for Musick
Vice, ill Habit
Vise, for a Workman
Voice, a Sound
Ure, Use
Ewer, a Bason
Your, of You
Use, to be wont
Ewes, Sheep
Wade, to go into Water
Weigh'd, in the Balance
Wail, to mourn
Whale, a Sea-Fish
Wain, to decrease
Wean, a Child
Wait, to look for
Weight, Heaviness
Ware, Merchandize
Wear, to put on Cloaths
Where, in what Place
Were, they were
Waste, to spend
Waist, the Middle
Way, to walk in
Weigh, to poize
Wey, forty Bushels
Weal, good
Wheal, a Pimple
Wheel, of a Coach

Wield,

<i>Weild</i> , to manage	<i>Wist</i> , knew
<i>Wild</i> , untamed	<i>Whist</i> , Silence
<i>Wen</i> , a Swelling	<i>Woe</i> , Misery
<i>When</i> , at what Time	<i>Who</i> , which
<i>Wet</i> , watery	<i>Wood</i> , of Trees
<i>Whet</i> , to sharpen	<i>Wou'd</i> , was willing
<i>What</i> , which	<i>Yarn</i> , Woollen
<i>Wat</i> , Walter	<i>Earn</i> , to get
<i>While</i> , in the mean Time	<i>Yern</i> , to have Pity on
<i>Wile</i> , a Trick	<i>Ye</i> , yourselves
<i>Whore</i> , a lewd Woman	<i>Yea</i> , yes
<i>Woer</i> , a Suiter	<i>Yew</i> , a Tree
<i>Wight</i> , an Island	<i>Ewe</i> , a Sheep
<i>White</i> , a Colour	<i>You</i> , yourself

Of the POINTS, or STOPS, and other MARKS used in Writing and Reading; with their Characters, Places, and Signification.

DUE Pointing is very necessary in Writing, to prevent Confusion, and assist the Reader, both as to a right Pronunciation, by the Raising and Falling of the Voice; and also to the more easy and distinct Apprehension of the Sense; and is of no less Use to others, who shall hear us read, or see our Writing.

The four principal Points or Stops, appertaining to a Sentence, are,

1. A Comma, which is marked thus (,)
2. A Semicolon, thus (;)
3. A Colon thus (:)
4. A Period, or Full Stop, at the End of a Sentence, thus (.)

[.] Example of the Comma.

It is not the bare Act, but the Intention of it, that makes it virtuous, or vicious.

At each of the Comma's, in the above-mentioned Sentence, you are to stop whilst you may leisurely tell one.

[;] Example of the Semicolon.

In the Scripture, the Ignorant may learn all useful Knowledge; and the Knowing may learn to discern their own Ignorance.

In this Sentence, you are to stop at the Semicolon at the Word *Knowledge*, whilst you may count two.

[:] Ex-

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[:] Example of the Colon.

It may be a less Evil to commit Sin, and not love it, than to love Sin, and not so frequently to commit it : The former argues Weakness of Grace ; but the other the Corruption of Nature.

At the Colon in this last Sentence, after the Word *it*, you are to stop whilst you may count three.

[.] Example of the Period or Full Stop.

Ignorance makes a Man conceited ; and Conceitedness makes him the Jest of Society.

Here, at the Point after *Society*, you are to stop till you can count four, before you read any farther.

An Example of these four Stops or Points we have, *Psalms cxli. 5. Let the Righteous smite me, it shall be a Kindness ; and let him reprove me, it shall be an excellent Oil, which shall not break my Head : For yet my Prayer also shall be in their Calamities.*

How strangely would this Text appear, if any one should write it thus—*Let the Righteous smite me it, shall be a Kindness and let ; him reprove me it shall, &c.*

A Note of Exclamation or Admiration is mark'd thus (!)

Example. *Oh the Depth of the Riches !*

A Parenthesis, which includes some additional or explanatory Words in a Sentence, is made thus ()

Example. *For I know that in me (that is, in my Flesh) dwelleth no Good.* But this, among the best Authors, is now as much as possible avoided.

When a Question is asked, you are to make a crooked Mark over the Period thus (?) which is called a Note of Interrogation.

Example. *Who would be desirous of Riches, did he but consider the Evils which attend them ?*

['] Apostrophe, is a Comma at the Head of Letters, signifying some Letter or Letters left out for quicker Pronunciation ; as *I'll* for *I will*, *would'st* for *wouldest*, *shan't* for *shall not*, *ne'er* for *never*, *is't* for *is it*, *'tis* for *it is*, *i'th'* for *in the*, *o'er* for *over*. It is also used to denote the Genitive Case, as *my Father's Land*, *my Wife's Son* ; for *Land of my Father*, *Son of my Wife*.

["] Diæresis, is a Mark to denote the Parting of two Vowels, which otherwise might seem to make a Diphthong, and is set over the latter Vowel, as in the very Word *Diæresis*, *Gileād*, &c. of which we have occasionally spoken before.

(.) Hy-

(-) Hyphen, a Note either of joining the Syllables of the same Word, when one or more of them happen to be writ in one Line, and the rest, for Want of Room, in another: Or else divides the several integral Parts of a compounded Word, as *Hand-granades*, *Fire-shovel*. In which Kind of Composition our Language is second to none; nor even to the copious *Greek* itself.

Ellipsis, is a Piece of a Line drawn to denote that some Part of a Verse or Sentence cited is left out, either at the Beginning or End; as

————— *O sacred rest!*

Sweet pleasing sleep! of all the pow'rs the best!

(“) Quotation, or double Comma reverse, is used at the Beginning of the Line, and shews what is quoted from an Author to be in his own Words.

(¶) Paragraph denotes a Division comprehending several Sentences under one Head, and is used in subdividing a Chapter or Book into lesser Parts or Portions.

(☞) Index, is a Note like a Hand, with a Fore-finger pointing out at something that is remarkable.

(†) Obelisk, is a Mark of Reference to the Margin.

(§) Section, denotes the Beginning of a new Head, or Discourse.

(˘) Accent, is placed over a Vowel, to denote that the Stress or Sound in Pronunciation, is on that Syllable.

(˘) Breve, over a Vowel, shews it must be sounded short, quick, and brisk.

(˘) Circumflex, is of the same Shape with the Caret, but is placed over some Vowel to shew the Syllable to be long, as *Euphrâtes*.

(˘) To the above add that which is called a Caret, that is to say, in *English*, it is wanting, marked as a *Latin* Circumflex, which is to shew where a Word, forgotten in the Hurry of Writing, and placed above the Line, is to come in.

And so much for Pointing; which, carefully observed, will add Grace and Credit to your Writing.

Of ABBREVIATIONS.

TO be ready in these shews a Dexterity in Writing, and is very necessary for Dispatch of Business. For by them we expeditiously express or set down a long Word, shortening it by making some Initial Letter or Letters

C

Letters

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Letters belonging to the Word, to express it; as in the TABLE following.

A. B. Artium Baccalaureus, <i>or</i> Batchelor of Arts	C. P. S. Custos Privati Sigilli, <i>or</i> Keeper of the Privy Seal.
Abp. Archbishop	Dr. Doctor <i>or</i> Debtor
Acct. Account	D^o Ditto
A. D. Anno Domini, <i>or</i> the Year of our Lord	D. Denarii, <i>or</i> Pence
A. M. Anno Mundi, <i>or</i> the Year of the World	Dec. xber, <i>or</i> 10ber, Decem- ber
Admsr. Administrators	Devon. Devonshire
Adml. Admiral	Decd. Deceased
Agt. against.	Doct. Doctrine
Amot. Amount	D. D. Doctor of Divinity
A. M. Artium Magister, <i>or</i> Master of Arts	E. g. Exempli gratia, <i>or</i> for Example
Ana. of each a like Quantity	Esq; Esquire
Ap. Apostle	Exon. Exeter
Aug. August	Feb. February
A. R. Anno Regni, <i>or</i> in the Year of the Reign	Gent. Gentleman
B. A. Batchelor of Arts	Hund. Hundred
B. D. Batchelor of Divinity	i. e. id est, <i>or</i> that is
B. V. Blessed Virgin	I. H. S. Jesus Hominum Sal- vator, <i>or</i> Jesus Saviour of Men
Bart. Baronet	Inst. Instant
Bp. Bishop	Jan. January
C. Chapter	Jn^o John
Cant. Canterbury	Knt. Knight
Cent. Centum <i>or</i> Hundred	L. Libræ, <i>or</i> Pounds
Chan. Chancellor	Lieut. Lieutenant
Chap. Chapter	LL. D. Legum Doctor, <i>or</i> Doctor of Laws
Capt. Captain	Mar. March
Cl. Clericus <i>or</i> Clerk	M. A. Master of Arts
Co. Company	Maj. Majesty
Col. Colossians, Colonel	Monf. Monsieur
Comrs. Commissioners	Mr. Master
Con. Constance	Mrs. Mistress
Cr. Creditor	M. D. Medicinæ Doctor, <i>or</i> Doctor of Physic
C. C. C. Corpus Christi Col- lege	M. S. Memoræ Sacrum, <i>or</i> Sacred
C. S. Custos Sigilli, <i>or</i> the Keeper of the Seal	

Sacred to the Memory ;	Rob. Robert
also Manuscript	Reg. Prof. Regius Professor
N. Note	Rt. Hon. Right Honourable
N. B. Notabene, Note, mark	S. A. Secundum Artem, or
well, or observe	according to Art
N. S. New Stile	St. Saint
N ^o Number	Se ^{ct} . Section
n. l. non liquet, or it does	Sept. or 7ber, September
not appear	Serj. Serjeant
Nov. or 9ber, November	Serv. Servant
Obj. Objection	Salop. Shropshire
O. W. Old Word	Sr. Sir
O. S. Old Stile	fs. Semissis, or half a Pound
Oct. or 8ber, October	S. S. T. P. Sacro-sanctæ The-
Oxon. Oxford	ologiae Professor, or Profes-
Pd. paid	for or Doctor of Divinity
p. per, or by	The. Theophilus
per Ct. per Centum, or by	Tho. Thomas
the Hundred	V. Verse
Parl. Parliament	Viz. Videlicet, or to wit, or
Philom. Philomathes, or Lo-	that is to say
ver of Learning	Will. or Wm. William
Philo-Math. Philo Mathe-	Wp. Worship
maticus, or a Lover of	Xn. Christian
Mathematics	Xt. Christ
P. S. Postscript	Xtopher. Christopher
Q. Question	y ^e the
q. d. quasi dicat, or as if he	y ⁿ then
should say	y ^o you
q. l. quantum libet, or as	y ^m them
much as you please.	y ^t that
q. f. quantum sufficit, or a	y ^r your
sufficient Quantity	Z. Zeal
qr. Quarter, or a Farthing	&c. & cetera, or and the
Rev. Reverend	rest, or and such-like

DIRECTIONS for young Practitioners in Writing, by Way of Introduction.

WRITING will never look Ornamental without a due Proportion of the Characters throughout the Whole, a just Distance between the Letters themselves as well as the Words, a natural Inclination of one Letter to another,

another, and a smooth Stroke perform'd with Boldness and Freedom.

The Proportion of Letters is regulated by the O and N, therefore practise them first in a large Character.

Make all your Body-Strokes with the Full, and all Hair-Strokes with the Corner of your Pen.

Never turn your Pen, nor alter the Position of your Hand.

Let your Hair-Strokes be proportioned to your Body-Strokes, and answer one another.

Your Letters without Stems must be even at the Top and Bottom.

Let your Stems above be in equal Length to *l* (*t* only excepted.)

Your Stems below must be in equal Length to *j*.

Let your Capitals be equal in Height to *l*, and a little stronger.

Let your Words stand twice the Distance as your Letters, and your Lines twice the Length of *l*, that no Stems may interfere.

Hold your Pen between the two Fore-Fingers extended almost strait, and the Thumb bending outwards with the Hollow downwards, and the Nib flat.

Let your Paper lie directly before you, and your Hand rest only on the Top of the Little Finger.

Rest your Arm lightly between the Wrist and the Elbow.

Keep your Body upright, and your Elbow almost close to your Side.

Rest your Body on your Left Arm, and keep your Paper down with your Left-Hand.

Never lean hard on your Pen.

In order to write expeditiously in Time, write slow at first.

Make the Nib of your Pen, for the Round and Round Text Hands, the Breadth of the Full-Stroke, and that Part lying next the Hand, somewhat shorter and narrower.

For the *Italian* Hand make the Nib somewhat finer, and the Slit longer.

Note, In Writing where Figures are intermixed, they must always slope.

Your Figures likewise must be larger than your Writing.

When your Figures are ranged in Columns, make them upright.

How

How to make a PEN.

TAKE the first, second, or third Quills in the Wing of a Goose or Raven, (those that are round and clean are the best;) when you have scraped off the thin Rind thereof with the Back-edge of your Pen-knife, hold it in your Left-Hand with the Feather-End from you, then enter the Back thereof sloping, and cut off as much in Length, as the Quill is in Breadth, and answer that with another Cut on the Inside, like and opposite to the former; then turn the Quill, and enter the Edge of your Pen-knife even in the Back thereof, and exactly in the Midst of the Half Round, neither inclining the Blade one Way nor other, that the Slit may not be made awry. Then put in the Peg of your Knife-haft, if it has one for that Purpose, or the End of a whole Quill, and with a sudden Twitch force up the Slit, holding your Left-hand Thumb hard upon the Back of the Quill, to put a Stop how far the Slit shall go. This being done, enter your Knife sloping in the other Side above the Slit, about twice the Breadth of the Quill, and cut away the Cradle-piece; then turn the Back upwards, and cut down to the End of the Slit the Cheek or Shoulder pieces, and in so doing turn the Knife on both Sides towards the Back. After this, place the Inside of the End or Nib of the Pen upon the Nail of your Left-hand Thumb, holding the Quill fast between the Fore and Middle-finger of that Hand. *Lastly*, To finish the Nib, enter the Edge of the Knife on the Back, and near the End thereof sloping, and immediately turning the Edge almost downright, cut it off.

There are four Considerations belonging to the Quill.

1. If the Quill be too hard, steep it a while in Water.
2. If it be too soft, harden it in Embers.
3. If it be too thick, pare a small Quantity from the Back of the Nib.
4. If it be too thin and weak, strengthen the Pen with a short Slit, a short Nib, and a broad Shoulder.

Materials for Writing.

A Pen-knife, Razor-metal, Quills good Store;
Gum Sandric Powder, to pounce Paper o'er;

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Ink shining black, Paper more white than Snow,
Round and flat Rulers on yourself bestow;
Small Compasses to rule your double Lines,
Wax, Sand, and Black-lead Pens for your Designs:
'These, with a willing Mind, and ready Hand,
Will make this Art your Servant at Command.

A Receipt for good BLACK INK.

TO six Quarts of Rain or River Water, (but Rain-Water is the best) put one Pound and a Half of fresh blue Galls of *Alleppe* (for those of *Smyrna* are not strong enough) bruised pretty small; eight Ounces of Copperas, clean, rocky, and green; also eight Ounces of clean, bright, and clear Gum Arabic; and two Ounces of Roch Allum: Let these stand together in a large Stone Bottle, clean stone Pot, or earth Pot, with a narrow Mouth to keep it free from Dust; shake, roll, or stir it well once every Day, and you will have an excellent Ink in about a Month's Time, and the older it grows, the better it will be for Use.

Ingredients for a Quart.

One Quart of Water, four Ounces of Galls, two Ounces of Copperas, and two Ounces of Gum, mixed and stirred as above.

 If you soke the green Peelings of Walnuts, (at the Time of the Year when pretty ripe) and Oak Saw-dust, or small Chips of it, in Rain Water, and stir it pretty often for a Fortnight, and then strain it, and add the same Ingredients as above, the Ink will be stronger and better.

The above is the common Method of making *Writing-Ink*, and will be sufficient for common Occasions; but the following Composition will produce an Ink vastly superior, though attended with but little more Expence and Trouble than that given above.

A Receipt for making the most perfect BLACK INK yet known.

TAKE a Gallon of soft Water, and boil in it a Pound of Logwood Chips for one Hour. Take the Decoction from the Fire, and pour it from the Chips, while boiling hot, upon a Pound of the *Alleppe* Gall, beaten to Powder,

Powder, and two Ounces of Pomegranate Peels, in a proper Vessel. After stirring them well together with a Stick, place them at a small Distance from the Fire, or, if in Summer, in the Sunshine, for three or four Days, stirring the Mixture often. At the End of that Time add half a Pound of green Vitriol powdered; and let the Mixture remain four or five Days longer, taking Care to stir it frequently; and then add farther four Ounces of Gum Arabic dissolved in a Quart of boiling Water; and, after allowing the Ink a proper Time to settle, strain it off from the Dregs through a coarse Linen Cloth; and keep it well stop'd for Use.

If the Ink be desired to shine more, the Proportion of Gum Arabic must be increased.

How to make RED INK.

TAKE three Pints of Vinegar, and four Ounces of ground Brazil Wood; simmer them together for an Hour; then put in four Ounces of Roch Allum, and one Ounce of Gum Arabic; and simmer these together for Half an Hour, and then strain it through a Flannel; bottle it up, well stop'd, for Use.

Or, you may dissolve half an Ounce of Gum Arabic in half a Pint of Water; then put a Pennyworth of Vermilion into a small Gallipot, and pour some of the Gum-water to it, and stir it well, and mix it together with a Hair Pencil, to a proper Consistency: It will not incorporate presently, but by the next Day it will; then having a clean Pen, dip it into the Ink, having first well stirred it with the Pencil: and then you may use it. It is a fine and curious Red, though not so free as the other. And, after the same Manner, you may make any other coloured Ink, as Blue, Green, Yellow, Purple, &c. having divers Gallipots for that Use. In like Manner you may mix the Shell Gold for curious Occasions, pouring two or three Drops, according to Discretion, into the Shell, and mix it well with a clean Hair Pencil, and with it put a little into a clean Pen, &c. The small Shells may be bought at some Fan-painters, two or three for Two-pence; or the large ones, (which are the best) at the Colour-shops, at Six-pence a Piece.

To keep INK from Freezing or Moulding.

IN hard frosty Weather, Ink will be apt to freeze; which, if once it doth, it will be good for nothing; for it takes away all its Blackness and Beauty: To prevent which, (if you have not the Conveniency of keeping it warm, or from the Cold) put a few Drops of Brandy, or other Spirits into it, and it will not freeze. And, to hinder its Moulding, put a little Salt therein.

Single Line COPIES in PROSE, in Alphabetical Order.

A.

Accustom Children to a true Notion of Things.
 Approve not of that Man who commends all you say.
 Ask not that Question you can resolve yourself.
 A Sense of our Ignorance is the first Step to Knowledge.
 Adversity is the Touch-stone of Friendship.
 Affect rather to be useful than popular.
 A flattering Companion is a dangerous Enemy.
 A wise Man's Anger is of short Continuance.
 Accept no preferment on dishonourable Terms.
 Affirm not all you hear, nor speak all you know.
 A true Friend, like a Glow-Worm, shines in the Dark.
 A wise Man governs with Ease, and is obeyed with Pleasure.
 A prudent Woman sweetens her Husband's Misfortunes.
 Abundance and Plenty make Prodigals dainty.
 A covetous Man is always in Want.
 Add to your Faith Virtue, and to Virtue Knowledge.
 A comely Countenance is a silent Commendation.
 A Place of ill Example may endanger a good Man.
 A prudent Man values Content more than Riches.
 A virtuous Mind is rather to be chosen than Promotion.
 A fair Piece of Writing is a Sort of speaking Picture.
 Authority is the main Point in Government.
 A great Lyar is seldom believed, though he speaks Truth.
 A wise Man will hear, and will increase Learning.
 Abstain from all Appearance of Evil.
 A merry Heart maketh a chearful Countenance.
 A false Balance is an Abomination to the Lord.
 Anger resteth in the Bosom of Fools.

A fof

A soft Answer turneth away Wrath.
A wise Son heareth his Father's Instructions.
A Fool uttereth all his Mind.
Adversity makes a Man wise, rather than Riches.
A Gift long waited for is bought, not given.
Advice comes too late when a Thing is done.
A Bribe will enter without knocking.

B.

BEfore you attempt, consider whether you can perform.
Bad Books are the public Fountains of Vice.
Be slow in chusing a Friend, slower in changing him.
Be not desirous to know other Men's Secrets.
Be more afraid of secret Sins than open Shame.
Bounty is more commended than imitated.
Brave Spirits promote the public Good.
Be patient in Adversity, and humble in Prosperity.
Beauty without Virtue is like a painted Sepulchre.
Be ashamed of your Pride, not proud of your Shame.
Be less confident and more diligent.
By learning to obey, you shall know how to command.
Beauty commands some, but Money all Men.
Brave Men will do nothing unbecoming themselves.
By a commendable Deportment we gain Reputation.
By Diligence and Industry we come to Preferment.
Be thou not one of them who are Sureties for Debts.
Buy thou the Truth, and sell it not.
Better is the End of a Thing than the Beginning.
Better to go to Bed supperless than to rise in Debt.
Buying and Selling is but Winning and Losing.
Better to be unmannerly than too troublesome.

C.

CHildren require Instruction as well as Provision.
Commit not that to another that you can do yourself.
Custom in Infancy becomes Nature in old Age.
Custom makes a Person move like an Engine.
Contemn not the Poor, nor flatter the Rich.
Charity should begin at home, and end abroad.
Commend nor discommend any Man hastily.
Chide him not too much who confesses his Fault.
Conceal your Weakness from them you instruct.
Compassionate Men never prove Extortioners.
Courtesy and Humility are Marks of Gentility.
Charity vaunteth not itself, is not puffed up.

C 5

Confession

Confession of a Fault makes half Amends for it.

Credit lost is like a broken Glas.

Contentment is preferable to Riches and Honour.

Consider the Shortness of Life and Certainty of Death.

Competency with Content is a great Happiness.

Courtiers receive Presents in the Morning, and forget them by Night.

Contentment makes a Man happy without a Fortune.

D.

Deride not Infirmities, nor triumph over Injuries.

Delight in what you undertake to learn.

Drinking is the Drowning of Cares, not the Cure of them.

Delight and Pleasure is but a Golden Dream.

Despair of Cure is worse than the Disease.

Delights, like Physicians, leave us when dying.

Do unto others as you would have them do unto you.

Danger and Adversity discover true Friendship.

Death will comfortably end a well-spent Life.

Devise not Evil against thy Neighbour.

Death and Life are in the Power of the Tongue.

Do nothing through Strife or Vain-Glory.

Deeds are the Fruits, Words are but Leaves.

Distance is the best Remedy against an evil Man.

Drunkenness reveals what Soberness conceals.

Do no Hurt, where you can do no Good.

Do not govern your Life by Fancy, but by Reason.

Delay in many Cases is dangerous.

E.

Education is that which makes the Man.

Examine and punish your own Infirmity.

Envy is always waiting where Virtue flourishes.

Envy, like a Vulture, preyeth upon itself.

Eat rather for Appetite than for Pleasure.

Esteem him who teacheth you Wisdom.

Every Delay of Repentance is a Cheat upon ourselves.

Every prudent Man dealeth with Knowledge.

Envy not a Sinner's Glory, for thou knowest not his End.

Exalt Wisdom, and she shall promote thee.

Even a Child is known by his Doings.

Every Purpose is established by Counsell.

Ease and Honour are seldom Bed-fellows.

Every Man's a Pilot in a calm Sea.

Examples prevail, when Arguments fail.

Every

Every Sluggard is the Cause of his own Misfortune.
Evil Company makes the Good bad, and the Bad worse.
Experience is the best Looking-glass of Wisdom.
Every idle Thought to Judgment must be brought.

F.

FAIR Words are often a Cloak for foul Actions.
Follow the Dictates of Reason, and you are safe.
Follies past are sooner remembered than redressed.
Forget not God in your Mirth, nor yourself in your Anger.
Frequent Commission of Sin hardens Men in it.
First learn to obey before you pretend to govern.
Fortune commonly favours the Courageous.
Feed your Body as your Slave, not as your Master.
Faults committed in public should be publicly reprov'd.
Forake the Foolish, and go in the Way of Understanding.
Faithful are the Words of a Friend.
Fools make a Mock at Sin.
Fools tie Knots, wise Men undo them.
Fools make Feasts, and wise Men eat them.
Fools may put somewhat in a wise Man's Head.
Flee Pleasure, and it will follow you.
Fair Words commonly dress foul Deeds.
Fair Faces have sometimes foul Conditions.
Few do Good with what they have gotten ill.
Future Events must be left to Providence.
Fear is a good Watchman, but a bad Defender.
Fraud in Childhood will become Knavery in Manhood.
Fear without Hope turns to Despair.
Frugality and Industry are the Handmaids of Fortune.

G.

GRIEF may shorten Life as much as a Disease.
Goodness generally leads to universal Esteem.
Grieve not for those Things which are out of your Power.
Great Sins will require great Repentance.
Great Receipts render Men liable to great Accompts.
Great Men have many Opportunities to do much Good.
Give God the first and last of each Day's Thought.
Good Education is the Foundation of Man's Happiness.
Give as chearfully as you receive.
God often corrects us in this Life, to save us in the next.
God is our Refuge, a very present Help in Trouble.
God, our Parents, and our Masters, cannot be requited.
Good Manners, Grace, and Truth, are Ornaments in Youth.

Great.

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Great Minds and small Means ruin many Men.
 God's Works only are perfect in their Kind.
 Good Men are safe, when wicked ones are at odds.

H.

Happiness is desired by all, but obtained by few.
 He is in some Degree wise that conceals his Ignorance.
 Honours grace wise Men, and make Fools notorious.
 He that will not work should not eat.
 He that begins well, has done Half the Work.
Homer's wise Men look before and behind.
 Hear both Parties before you give Judgment.
 He that boasts of his Sins glories in his Shame.
 He that trusts a known Knave should expect to be cheated.
 He never wants Comfort that has Content.
 He that delights to plant and set, puts After-ages in his Debt.
 Hear, ye Children, the Instruction of your Father.
 Hear Instruction; be wise, and refuse it not.
 He that pitieth another remembereth himself.
 Hasty Resolutions are seldom fortunate.
 He that stumbles, and falls not, mends his Pace.
 Hypocrites first cheat the World, and at last themselves.
 He that sends a Fool on an Errand ought to follow him.
 He is a wise Security that secures himself.
 He that sins against Conscience sins with a Witness.
 He that swims in Sin must sink in Sorrow.

I.

Idleness has no Advocate, but many Friends.
 It requires as much Care to keep as to get an Estate.
 Industry keeps the Mind clear and the Body healthy.
 In others forgive much, nothing thyself.
 It is a double Curse to be poor and proud.
 In Prosperity prepare for Adversity.
 Intemperance kills more than the Sword.
 It is a Folly to fear, when we cannot avoid.
 Ingratitude thinks itself in no Man's Debt.
 If any Man lack Wisdom, let him ask it of God.
 If Riches increase, set not your Heart upon them.
 In the Multitude of Counsellors there is Safety.
 Industry is Fortune's Right-hand, and Frugality her Left.
 Instruction and a good Education are a durable Portion.
 It is good to have a Friend but bad to need him.
 It is better to be unborn than untaught.

Improvement

Improvement of Parts is by Improvement of Time.

It is the Work of an Age to repair the Miscarriages of an Hour.

K.

K NOW when to speak, and when to hold your Tongue.

Keep Company with those who may make you better.

Keep thy Tongue a Prisoner, that your Body may go free.

Knowledge puffs up some Men, and humbles others.

Knowledge is the Treasure of the Mind.

Keep thy Tongue from Evil, and thy Lips from Guile.

Keep good Company, and you shall be of that Number.

Knavery may serve a Turn, but Honesty's best at long Run.

Keep a close Mouth, if you would have a wise Head.

Kings, as well as mean Men, must die.

Kings may command, and Subjects must obey.

Keep at a Distance from ill Company.

Keep good Decorum in your Words and Actions.

Kings may win Crowns, but cannot conquer Death.

L.

L Earning is the rich Man's Ornament, and the poor Man's Riches.

Laziness is commonly punished with Want.

Little Sins commonly lead Men to great Evils.

Learning is the Ornament of Youth and Comfort of Age.

Life and Death are in the Power of the Tongue.

Lament not the Loss of that which you cannot retrieve.

Lying Lips are an Abomination unto the Lord.

Let another Man praise thee, and not thy own Mouth.

Love not Sleep, lest thou come to Poverty.

Let your Letter stay for the Post, not the Post for your Letter.

Life without a Friend is Death with a Witness.

Learn to live as you would wish to die.

Learn to unlearn what you have learnt amiss.

Liberty is grateful to all, but destructive to many.

Let no Jest intrude upon good Manners.

Lost Opportunities are very rarely, if ever, recovered.

Let not the Work of To-day be put off till To-morrow.

Laugh not out of Measure, nor out of Season.

M.

M A N Y have suffered by Overtalking, but few by Silence.

ent Man has much to learn, but a short While to live.

Mone

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Money is some Men's Servant, and other Men's Master.
 Malice seldom wants a Mark to shoot at.
 Make not a Jest at another Man's Infirmary.
 Misfortune is the Touchstone of Friendship.
 Make Provision for Want in Time of Plenty.
 My Son, if Sinners intice thee, consent thou not.
 Mercy and Truth shall follow them who devise Good.
 Make no Friendship with an angry Man.
 My Son, gather Instruction from thy Youth up.
 Many Things fall between the Cup and the Lip.
 Mischiefs come by the Pound, and go away by the Ounce.
 Make not thy Friend cheap to thee, nor thyself to thy
 Friend.

Monuments of Learning are the most durable.
 Many know Good, but do not the Good they know.
 Measure not Goodness by good Words only.
 Many live Beggars all their Life, that they may not die for.
 Money makes some Men mad, many merry, but few sad.
 Many are led by the Ears, more than by the Understanding.
 Many are made Saints on Earth that never reach Heaven.
 Mend your Manners, and that will mend your Fortune.
 Many want Help, that have not the Face to ask it.

N.

NONE pretend to hate an Injury more than he who offers it.

No Torments are so great, but Patience may vanquish.
 Nothing is more contagious than an ill Example.
 Not to grow better is commonly to grow worse.
 No Man hath seen God at any Time.
 None are Fools always, but every one sometimes.
 No Day passeth without some Grief.
 Neither praise nor dispraise yourself.
 None should covet what cannot possibly be had.
 Nothing is constant in this uncertain World.
 Necessity is commonly the Mother of Invention.
 Nothing is so hard, but Diligence may overcome.
 None can lay himself under an Obligation to do ill.
 Nature seldom changes with the Climate.

O.

OF all Prodigality, that of Time is the worst.
 Our Life here is but a Journey to the next World.
 One Vice is more expensive than ten Virtues.
 One Fault cannot justify the Commission of another.

One bad Companion may ruin many good Men.
Of all Poverty, that of the Mind is most deplorable.
Of all Things, Death should never be forgot.
Out of the Abundance of the Heart the Mouth speaketh.
Only by Pride cometh Contention.
Open Rebuke is better than secret Hatred.
On a good Bargain think twice.
One Ounce of Discretion is worth a Pound of Wit.
Once well done is twice done.
Opportunity neglected brings severe Repentance.
On present Time depends our future State.
Our Minds must be cultivated as well as our Plants.
Other People's Death should be Memento's to our own.

P.

Prosperity gains Friends, and Adversity tries them.
Pry not into the secret Affairs of others.
Punishment deferred commonly falls the heavier.
Providence consults our Wants, not Wantonness.
Passion is a bad Counsellor, and as ill a Speaker.
Pride, like a wild Horse, overthrows his Rider.
Pursue useful and profitable Studies.
Poverty and shame attend those that refuse Instruction.
Profess not to know what thou art ignorant of.
Pain is forgotten when Gain follows.
Patience with Poverty is all a poor Man's Remedy.
Provide against the worst, and hope for the best.
Poor Men want many Things, but covetous Men all.
Put not off the main Business of Life, to the very Article
of Death.
Pain we can count, but Pleasure steals away.
Poor Freedom is better than rich Slavery.
Passion and Partiality govern in too many Cases.

Q.

Quantity is not so considerable as Quality.
Quench not your Desires when they tend to Good.
Quarrels are easily begun, but ended with Difficulty.
Quarrelsome Persons are mischievous Companions.
Quietness is secure, but Rashness is dangerous.
Quench not the Spirit; pray without ceasing.
Quick at meat, quick at Work.
Quick Promisers are slow Performers.
Questions in jest need no serious Answers.
Quietness and Content are most excellent Companions.

Quiet

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Quiet Men have quiet Minds, and enjoy Content.
Quarrelsome Persons sometimes meet with their Match.
Qualify exorbitant Passions with Quietness and Patience.

R.

Religion is best understood when most practised.
Revenge not Injuries, but forgive them.
Reality is now become a great Rarity.
Rather mistrust too soon, than be deceived too late.
Revenge is a Pleasure only to a mean Spirit.
Repentance is the Physic of the Soul.
Rich Men depend on the Poor, as well as the Poor on them.
Riches profit not in the Day of Wrath.
Remember thy Creator in the Days of thy Youth.
Ride softly, that you may come home the sooner.
Rely not on another for what you can do yourself.
Remember your Duty to God, your Neighbour, and yourself.

Repent To-day, To-morrow may be too late.
Reputation is gain'd by many Actions, and lost by one.
Religion in Hypocrites is, as it were, but Skin-deep.
Religion hath and doth give Countenance to much Wick-
edness.

Riches serve a wise Man, and rule a Fool.

S.

Self Love is the greatest Flatterer in the World.
Saying and Doing should be but one Man's Office.
Silence is an Antidote against an envious Tongue.
Sin goes before, and Shame certainly follows after.
Success does not always attend Desert.
Shame and Disgrace shall be the Promotion of Fools.
Say not thou, I will recompence Evil.
Separate thyself from thine Enemies.
Speech is the Picture of the Mind.
Shew me a Lyar, and I will shew you a Thief.
Sin and Sorrow are inseparable Companions.
Soft Words sometimes work upon the proudest Heart.
Small Means and large Minds ruin many Men.
Short are all Extremes, whether of Good or Evil.

T.

THE Power of Example prevails more than Precept.
Truth is ashamed of nothing but to be hid.
Travel makes a wise Man better, and a Fool worse.
Trust not too far, nor mistrust any too soon.

The

The Hope of Reward sweetens Labour.
To praise yourself is the Way to be dispraised.
To be cheated twice is once your Fault.
The Death of our Passion is the Life of our Soul.
There are none so poor as those whom God hates.
Though old and wise, yet still advise.
They need much, whom nothing will content.
The greatest Talkers are always the least Doers.
The Worth of a Thing is best known by the Want of it.
The doing nothing is very near doing Evil.
Truth is the strongest Band of human Society.
To do Good is the Way to find it.
Time, Tide, and Carriers, will for no Man stay.
The Unfortunate is insulted by every Rascal.

V.

VICE often deceives us under the Colour of Virtue.
Value not yourself by other Men's Opinion.

Variety is the Beauty of the World.
Virtue to noblest Acts the Mind inclines.
Virtue often suffers, when Vice goes unpunished.
Value not so much a fine Scabbard, as a good Sword.
Valour can do little without Discretion.
Undertake deliberately, but execute vigorously.
Unsanctified Prosperity is the Bane of Virtue.
Unlawful Love ends generally in Bitterness.
Unto the Upright there arises Light in Darkness.
Unto thee will I cry, O Lord, be not silent to me.
Virtue is first to be sought for, and Money the next.
Virtue and Fortune work Wonders in the World.
Virtue is commended of all, but followed by few.
Virtue is seldom found a Match for Power.
Unwillingly go to Law, and willingly make an End.
Understanding a Thing is half doing it.
Use soft Words, and hard Arguments.
Understand Things not by their Form, but Quality.

W.

WHatever is forbid in Act, is also in Thought.
Wicked Practices discover bad Principles.
Would you be wise, endeavour to be good.
Write Injuries in Dust, but Kindnesses in Marble.
Wisdom to the Mind is like Health to the Body.
When Passion rides, then give Reason the Rein.
Wise Men keep their Expences short of their Income.

Where

Where our Treasure is, there will our Hearts be also.
Weight and Measure take away Strife.

Where there is no Fault, there needs no Pardon.

We keep a better Account of our Money than our Time.

We must not blame Fortune for our own Faults.

Would you be rich, be industrious; if wise, be studious.

X.

Xenophon accounted the wise Man happy.

Xerxes wept at the changeable State of Man.

Xenophon commended heroick and virtuous Exercises.

Xenophon was a learned General.

Xenophon was a great Captain, as well as a Philosopher.

Xerxes wept at the Thoughts that his vast Army would be
dead in 100 Years.

Xerxes whipt the Sea, because it would not obey his Com-
mand.

Xenocrates, though a Philosopher, was very dull and heavy.

Y.

Youth is full of Disorder, and Age of Infirmary.

Young Men are prone to hearken to bad Counsel.

You may know Men by the Company they keep.

You may be seen to give; but give not to be seen.

Your Vice, and not your Poverty, is your Shame.

Young Men, see that you honour the Aged.

You must crack the Shell before you can have the Kernel.

Young Men go to Death, but Death goes to old Men.

Yield quietly to what must come unavoidably.

Young Men in Strength should provide against Age and
Weakness.

Z.

ZEAL grounded on Knowledge enlivens Devotion.

Zeal for Religion cannot warrant Revenge.

Zoilus and Momus will be always carping.

Zeal, when misguided, proves mischievous.

Zeal, in a good Cause, commands Applause.

Zealously strive for an eternal Crown.

Zeno was the first of the Stoic Philosophers.

Zeal without Knowledge is but religious Wild-fire.

Zeal, if not rightly directed, is very pernicious.

Short Lines for TEXT HAND.

Abandon whatsoever's ill. Care destroys the Body.

Be wise betimes. Do the Things that are just.

Expect

Expect to receive as you give.	Recompense a good Turn.
Frequent good Company.	Repent of your Sins.
Give what you give chearfully.	Spare for to live.
Have good Men in Esteem.	Sin not wilfully.
Imitate that which is good.	Time well improve.
Keep God's Commandments.	Turn from your Sins.
Learn to be wise.	Use moderate Pleasure.
Money answers all Things.	Use not bad Company.
Nothing get, nothing have.	Vain are most Pleasures.
Observe Modesty.	Vile are the Vulgar.
Pleasures are very short.	Wisdom is the principal Thing.
Pains are very long.	Wise Men are scarce.
Quit all Revenge.	<i>Xenophon and Xenocrates.</i>
Quiet your Passions.	<i>Zeno and Zenobia.</i>

COPIES of two, four, and six LINES, in Verse alphabetically digested.

A.

ALL human Things are subject to Decay;
 And, when Death summons, Monarchs must obey.
 Ape-like fond Parents act extremely ill,
 While with Embraces, whom they love, they kill.
 An honest Man may take a Knave's Advice;
 But Ideots only will be cheated twice.

All Men may with Impunity receive
 What Freedom, Prudence, and right Reason give:
 But the least Swerving from that Rule's too much;
 For what's forbidden 'tis a Sin to touch.

A Man who changes Gold for burnish'd Brass,
 Or small true Gems for worthless Toys of Glass;
 Is not, at length, more certain to be made
 Ridiculous, and wretched by the Trade;
 Than he, who sells a solid Good, to buy
 The gaudy Paint of Pride and Vanity.

B.

Brave Deeds and spotless Virtue have
 Rewards, which shall out-live the Grave.
 Brave Minds oppress'd should, in Despite of Fate,
 Look greatest like the Sun in lowest State.
 Beauty, like Ice, our Footing does betray;
 Who can tread sure on the smooth slipp'ry Way.

Pleas'd

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Pleas'd with the Passage we slide swiftly on,
And see the Danger which we cannot shun.

By being Fortune's Friend, you shall have Friends ;
But in Adversity their Friendship ends.
See how the Doves to new-built Houses run,
And cautiously the ruin'd Tower shun.
The empty Barns no Vermin ever haunt :
And no Friend comes to him that is in Want.

C.

Content is all we aim at with our Store,
And having that with little need no more.
Custom's a cruel Tyrant ; he that can
Well bear, or break its Force, is more than Man.

Censure none rashly ; Nature's apt to halt :
Look inward : He's unborn that has no Fault.

Cast off all needless and distrustful Care ;
A little is enough, too much a Snare.

Our Journey from our Cradle to our Grave
Cannot be long, nor large Provision crave.

Custom too often Wisdom over-rules,
And only serves for Wisdom to the Fools.

Ill Customs, by Degrees, to Habits rise ;

Ill Habits soon become exalted Vice.

Ill Habits gather by unseen Degrees,

As Brooks make Rivers, Rivers swell to Seas.

D.

Daring Ambition loves to slide, not stand ;
And Fortune's Ice prefers to Virtue's Land.

Death comes too soon in gay and prosperous Days ;
But in our Misery too long delays.

Despise the World with all its fading Joys ;
Compar'd with Heavenly Things, they're trifling Toys.

Doubtless, for Happiness we need not roam :

'Tis easiest had with little, and at home.

The Man whom God doth with Contentment bless,
Tho' he has little, does the World possess.

Delays are dangerous, take a Friend's Advice,

Begin, be bold, and venture to be wise.

He who defers his Work from Day to Day,

Does on a River's Bank expecting stay,

Till the whole Stream, which stop't him, should be gone,

Which, as it runs, for ever will run on.

Example

E.

Example is a living Law, whose Sway
Men more than all the written Laws obey.
Each good Man is, in any Place, at home ;
The Bad's an Exile wheresoe'er he come.

Ears we have two, one Tongue, from whence 'tis clear,
Before we speak once, we ought twice to hear.

External Pomp, and visible Success,
Sometimes contribute to our Happiness ;
But that which makes it genuine and refin'd,
Is a good Conscience, and a Soul resign'd.

Ev'n I condemn the hated Ills I act,
And thus a double Misery contract :
Yet of my Chains I'm not so weary grown,
But that I still am putting others on :
For Sin had always this attending Curse,
To back the first Transgression with a worse.

F.

Fortune a Goddess is to Fools alone :
The Wise are always Masters of their own.
Friendship will not the least Reserve endure ;
But loves to share in Grievs it cannot cure.

Fear timely comes before a Fault's begun :
He fears too late, who fears not till 'tis done.

Force never yet a gen'rous Breast did gain :
We yield on Parley, but are storm'd in vain.
Constraint in all Things makes the Pleasure less ;
Sweet is the Love which comes with Willingness.

Friends are like Leaves that on the Trees do grow,
In Summer's prosp'rous State much Love they show ;
But art thou in Adversity ? Then they,
Like Leaves, from Trees in Autumn, fall away.
Happy is he, who hath a Friend indeed ;
But he more happy is, who none does need.

G.

Great Wits to Madness sure are near ally'd ;
And thin Partitions do their Bounds divide.
Great Souls discern not where the Gap is wide,
But always look upon the farthest Side.

Great Wits, as well as Warriors, only gain
Laurels and Honours by their Toil and Pain.

Great is the Steadiness of Soul and Thought,
By Reason bred, and by Religion taught ;

Which,

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Which, like a Rock, amidst the stormy Waves,
Unmov'd remains, and all Affliction braves.

Great was the Genius, most sublime that Thought,
Which first the curious Art of Writing taught ;
This Image of the Voice did Man invent,
To make Thought lasting, Reason permanent :
Whose softest Notes with Secrecy can roll,
To spread deep Mysteries from Pole to Pole.

H.

HE who pays more Respect to Wealth than Sense,
Would worship Idols to increase his Pence.

He who bewails, and not forsakes his Sin,
Confesses only what he'll do again.

He's rich, who never covets worldly Pelf ;
He's poor, who has enough, yet starves himself.

He that once sins, like him who slides on Ice,
Goes swiftly down the slipp'ry Ways of Vice :
Tho' Conscience checks him, yet, those Rubs gone o'er,
He slides on smoothly, and looks back no more

Happy the Man, of Mortals happy'st he,
Whose quiet Mind from vain Desires is free ;
Whom neither Hopes deceive, nor Fears torment,
But lives at Peace, within himself content :
In Thought, or Act, accountable to none,
But to his Conscience, and his God alone.

I.

Immodest Words admit of no Defence :
For Want of Decency is Want of Sense.

It's to detract to give one less than due ;
Who gives as much, must be as learned too.
In liquid Burnings, or in dry to dwell,
Is all the sad Variety of Hell.

In all Misfortunes, this Advantage lies,
They make us humble, and they make us wise :

And he, that can acquire such Virtue, gains
An ample Recompence for all his Pains.

If ever I more Riches did desire,
Than Cleanliness and Quietness require ;
If e'er Ambition did my Fancy cheat
With any Wish so mean, as to be great ;
Continue, Heav'n, still from me to remove
The humble Blessings of that Life I love.

KNOW

K.

KNOW when to speak, and silent when to sit;
 Fools silent often pass for Men of Wit.
 Knaves, tho' envelop'd in a deep Disguise,
 Are yet too obvious to deceive the Wise:
 Keep thy Friend's Counsel when thou art in Trust;
 And as in Words, so be in Actions just.
 Keep down your Lust: Vice fades, if you take Pains;
 Nourish'd by Sloth, more Ground it ever gains.
 A Man employ'd, no Leisure has to sin,
 But being idle falls into't again.
 Keep Death and Judgment always in your Eye;
 None's fit to live, but who is fit to die.
 Make use of present Time; because you must
 Take up your Lodging shortly in the Dust.
 'Tis dreadful to behold the Setting-Sun,
 And Night approaching, e'er your Work is done.

L.

LIFE for Delays and Doubts no Time does give;
 None ever yet made Haste enough to live.
 Leave God to manage for thee, and to grant
 What his unerring Wisdom sees thee want.
 Love is the Monarch Passion of the Mind,
 Knows no Superior, by no Law confin'd;
 But triumphs still, impatient of Controul,
 O'er all the proud Endowments of the Soul.
 Laughter, if rightly us'd, may be confess'd,
 In some Sort, to distinguish Man from Beast;
 While by due Management it is allay'd,
 And the strict Rules of Reason are obey'd:
 But shews, if over loud, or over long,
 Your Head's but weak, altho' your Lungs be strong.

M.

MEN are more oft on Earth than Heav'n intent,
 And their industrious Search is downwards bent.
 Mens Follies make them frequently to err;
 And then they Vice to Virtue do prefer.
 Waste much of precious Time, while in your Pow'r,
 Be careful well to husband every Hour.
 Marble, or Brass, devouring Time may waste;
 But Wit, as long as circling Time, shall last:
 That ever lives, nor can to Death submit;
 No Tomb he needs, whose Monument is Wit:

Mankind

NO

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Mankind one Day serene and free appear,
The next they're cloudy, fullen, and severe ;
New Passions new Opinions still excite,
And what they like at Noon, despise at Night ;
They gain with Labour what they quit with Ease ;
And Health, for want of Change, grows a Disease.

N.

NONE more pragmatical in State appear,
Than they whose Judgments in their Pockets are.

Next to the Power of making Tempests cease,
Is, in a Storm, to learn to be at Peace.

No Minutes surely bring us more Content,
Than those in pleasing, useful Studies spent.

No Art without a Genius will prevail,
And Parts without the Help of Art will fail :
But where both these Ingredients jointly meet,
They make the happy Character compleat.

Nature is ever various in her Frame ;
Each has a different Will, and few the same.
The greedy Merchants, led by Lucre, run
To the parch'd *Indies*, and the Rising Sun ;
While others safe at home had rather keep,
Indulge their Sloth, and fatten with their Sleep.

O.

OUR Reformation never can prevail,
While Precepts govern, and Examples fail.

Our Shoes and Fortune sure are near ally'd :
We limp in strait, and stumble in the wide.

Observe in your Discourse the Bounds of Reason :
For Sense proves Nonsense, spoken out of Season.

Our Yesterday's To-morrow now is gone,
And still a new To-morrow does come on ;
We by To-morrow draw up all our Store,
Till the exhausted Well can yield no more.

Oh ! to what Heavenly Pitch that Soul aspires,
That craves no more than Nature's Need requires ;
But studies to be sober, wise, and good ;
Content with mod'rate Fortune, and mean Food ;
Who envies no Man Honour, or Estate ;
Nor yet despises those crush'd down by Fate.

P.

Presence of Mind, and Courage in Distress,
Are more than Armies to procure Success.

Premeditate

Premeditate your Speeches; Words, once flown,
Are in the Hearers Power, not your own.

Purchasing Riches with our Time and Care,
We lose our Freedom in a gilded Snare;
And, having all, all to ourselves refuse,
Oppress'd with Blessings, which we fear to use.

Perhaps, deceived by Lust supplying Wealth,
New enjoy'd Pleasures, and a present Health,
We fear to lose what a small Time must waste,
Till Life itself grows the Disease at last:
Begging for Life, we beg for more Delay,
And to be long a dying only pray.

Quietness love, hate all Debate and Strife;
Your Mind inform, and well reform your Life.
Quietly learn all Crosses to endure;
Repining doth more Misery procure.

Quarelsome Natures often meet their Kind;
And commonly what such Mên seek, they find.

Query was made, What did *Jehovah* do
Before the World its first Foundation knew?
The Answer was, He made a Hell for such,
As were too curious, and would know too much.

Quickly lay hold of Time, while in your Power;
Be careful well to husband every Hour:
For Time shall come, when you shall sore lament
Th'unhappy Minutes which you have mispent.
Despair of nothing which you would attain,
Unweary'd Diligence your Point will gain.

R.

Remember Death, think every Day your last;
Lament all Vanities, and Follies past.

Rare is the Man, whose Life becomes a Scene,
To shew the guilty World the golden Mien.

Rich Men are not too rich, whom Pride ne'er swells;
Nor poor Men poor enough, in whom Pride dwells.

Return the Kindness that you do receive,
As far as your Ability gives Leave.

Nothing can be more barbarously rude,
Than a vile Temper of Ingratitude.

Reason refin'd, and to Perfection brought
By wise Philosophy, and serious Thought,
Supports the Soul beneath the pond'rous Weight
Of angry Stars and impropitious Fate:

D

Then

Then is the Time she should exert her Power,
And make us practise what she taught before.

S.

Sorrow and Joy are ne'er disguis'd by Art ;
Our Forehead shews the Secrets of our Heart.

Sicilian Tyrants never yet could find
A greater Torment than an envious Mind.

Sin is a Slave to Custom, and will die,
Whenever Habits suffer a Decay.

See how the Lilies flourish white and fair,
See how the Ravens fed from Heaven are ;
Then ne'er distrust thy God for Cloth and Bread,
Whilst Lilies flourish, and the Raven's fed.

Severe Decrees may keep our Tongues in Awe ;
But to our Thoughts what Edicts can give Law ?
Ev'n you yourself to your own Breast shall tell
Your Crimes, and your own Conscience prove your Hell:
For Conscience is the Test of ev'ry Mind ;
Seek not yourself without yourself to find.

T.

THE stupid World most Honours pays to those,
Who on their Understanding most impose.

The World's a Wood, in which most lose their Way,
Though by a different Path each goes astray.

Titles may set a Gloss upon our Name ;
But Virtue only is the Life of Fame.

There is a Lust in Man no Charm can tame,
Of loudly publishing his Neighbour's Shame.
On Eagles Wings immortal Scandals flie,
While virtuous Actions are but born and die.

The happiest Man that ever breath'd on Earth,
With all the Glories of Estate and Birth,
Had yet some anxious Care to make him know
No Grandeur was above the Reach of Woe:
To be from all Things, which disquiet, free,
Is not consistent with Humanity.

V.

VIEW all the habitable World, how few
Know their own Good, or knowing it pursue !

Virtue must be the Fashion of the Town,
Before the Beaus and Ladies put it on.

Usurpers seldom to the Shades descend,
By a dry Death, or with a quiet End.

Virtue

Virtue's the chiefest Beauty of the Mind,
 The noblest Ornament of human Kind :
 Virtue's our Safeguard, and our guiding Star,
 That flirs up Reason, when our Senses err.
 Venture not far into the dang'rous Deep,
 But on the Land an equal Prospect keep :
 The Ship is weak, and small, wherein we sail,
 And at the Mercy of each conqu'ring Gale.
 Learn then, my Soul, on Heav'n to fix thine Eye ;
 Resolve to live, as you desire to die.

W.

WHY should we hope of being others Heirs ?
 Does not our Sand run out as fast as theirs ?
 Who with their present State are not content,
 May find a worse for their just Punishment.
 When once our vicious Appetites are tir'd,
 We loath the Thoughts of that we once admir'd.

Want is a bitter and a hateful Good,
 Because its Virtues are not understood :
 Yet many Things, impossible to Thought,
 Have been by Want to full Perfection brought.
 When my short Glas its latest Sand shall run,
 And Death approach to fright the Lookers on ;
 Softly may I sigh out my Soul in Air,
 And thou, my pitying Guardian Angel, there ;
 Guide and conduct her through the Milky-way.
 To the bright Regions of eternal Day.

X.

Xenophilus did well in Health abide
 One hundred seven Years, and then he died.
 Xerxes survey'd his mighty Host with Tears,
 To think they'd die within an hundred Years ;
 At by his own ill Management we see,
 They're all destroy'd, and dead in less than three.
 Xanthippe brawls, while Socrates is still,
 At ne'er was quiet, though she had her Will :
 Her Fury made him patient, her perplex'd,
 That when she raged, she could not make him vex'd.
 Xerxes, as Poets sing, a haughty Brave,
 Whipt the rude Winds, and made the Sea his Slave :
 How return'd he, let us ask again ?
 A poor Skiff he pass'd the bloody Main,
 Soak'd with the slaughter'd Bodies of his Train.

D 2

}
 For

For Fame he pray'd, but let the Event declare,
He had no mighty Penn'worth of his Prayer.

Y.

YOU sometimes both your Time and Money spend
To lay an Obligation on your Friend.

Yesterday's past, To-morrow's none of thine ;
To-Day thy Life to virtuous Acts incline.

You Parents, who your Hopes in Children place,
Teach them betimes to run in Virtue's Race.

You'll mend your Life To-morrow, still you cry :
In what far Country does this Morrow lie ?
It stays so long, 'tis fetch'd so far, I fear,
'Twill be both very old, and very dear.

Youth is unfit great Matters to contrive,
Their Reason's weak, their Judgment scarce alive :
But yet for Action they're more proper far :
They bold and active, strong and vigorous are.
Aged Experience better sure doth know ;
But sprightly, able Youth can better do.

Z.

ZEAL is a Fire, and useful in its Kind :
But nothing is more dangerous, if blind.

Zaleucus made his Laws so strict, that those,
Who were Adult'ers, both their Eyes should lose.

Zeal for the public Good with Men is rare ;
But for Self-Interest, that's their chiefest Care.

Zaccheus, short of Stature, fain would see
His Saviour pass, and climbs into a Tree.
If we by Faith would see this glorious King,
Our Thoughts must mount on Contemplation's Wing.

Zaccheus fear'd no Danger ; comes at Call ;
He'll venture nothing, who can fear a Fall :
Needs must he down, by such a Spirit driv'n ;
Nor could he fall, unless he fell to Heaven.
Down came *Zaccheus*, ravished from the Tree :
Birds that are shot, ne'er dropp'd so quick as he.

To write on Paper Gold Letters, called Shell Gold.

LAY a little Leaf Gold upon a fine earthen Plate,
drop thereon a little clear Virgin's Honey ; then
it with your clean Knife's Haft, until it is stiff like
a Paste, which put into an Oyster Shell ; when you

write with it, put a little Gum-water on the Side of the Gold, and mix a little thinly, fit for your Pen.

How to write secret Letters.

WRITE what you would have seen on one Side of the Paper with common Ink, and on the other Side with Milk, that which you would have secret; and, when you would make the same legible, direct your Friend to hold that Side, which is written with Ink, to the Fire, and the milky Letters will shew bluish on the other Side, and easy to be read.

Another Way.

RULE two Papers of one Bigness with Lines of an equal Distance, cut full of square Holes, which being laid upon another Sheet of Paper, you may write your Mind upon it thro' these Holes, and fill up the Spaces with other Words, which ought to hang together in good Sense, to prevent Suspicion. Each Person to whom you write, must have one of the cut Papers to read your Letters; and this Way of Writing cannot be read by any else.

Another Way.

YOU may first write a Letter, that may carry good Sense to your Friend, but let the Lines be wide asunder: Then between these Lines write your secret Letter, with Gall-water only, wherein the Galls have been infused but a little Time; for if, after you have written with it, there be any sensible Colour left on the Paper, you must throw away the Water, and make new; this being dry, and of one Colour with the Paper, will give no Cause of Suspicion; and the rather, because the Letter purporteth a sufficient Sense already. Now, for the Discovery of it, you must dissolve some Copperas in fair Water, and with a fine Pencil dipt in the Copperas-water, you must moisten the Interlining of your Letter, and thereby you shall make it legible.

How to write with Blue and Red Letters at once, with the same Ink and Pen, and upon the same Paper.

PUT the Quantity of a Hazel-nut of Litmose-Blue to three Spoonfuls of Conduit-water, wherein some Gum-Arabic is dissolved; and when it hath settled the Space of an Hour, if you write therewith, you will have perfect blue Letters;

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Letters: And if you dip a Pencil in the Juice of Lemon, and wet some Part of the Paper therewith, and afterwards let your Paper dry again, and then write upon the Place where the Juice of the Lemon was laid, with your blue Ink, the Letters will suddenly become red, and in all the rest of the Paper the Letters will be blue.

LETTERS *on Business, Compliment, and several Occasions.*

THE Youth has here a Collection of useful Letters on such Subjects as may naturally occur to a young Man, both before, and at his first setting out in the World; which, if read attentively, and copied carefully, will soon correct his Orthography, amend his Manner of Writing, and serve him to form a tolerable Style.

A Letter from a Scholar, inviting his Cousin to apply himself to Learning.

Dear Cousin,

THE Kindness I have for you cannot be easily expressed; nor is it confined to your Person alone, but extended to your future Happiness and Welfare, which you cannot better secure than by Learning; for that will prove a constant and faithful Friend, when those on whom you fondly place your Confidence may fail or forsake you.

Let me therefore intreat you no longer to trifle away your Time, in pursuing Things lighter than Vanity; but leave those childish Extravagances, and apply yourself to Learning; for certainly, if you knew what sweet Content and Pleasure I find in my Studies, you would not be long absent from your own.

But, however that be, let me hear from you, and know how you are affected with Regard to this Particular. Pray write soon; for your Answer will be earnestly expected by

Your very loving Cousin,

And sincere Friend,

June 9th, 1764.

ADAM TRUE

From a Son to his Parents, to thank them for good Education.

Most dear Parents,

GRatitude obliges me often to trouble you with my Epistles; the only Return I am as yet capable of making, for the many Benefits and Advantages I have received from you. Especially from your prudent Care in bringing me to the Knowledge of those Things which have seasoned my early Years with the Fear of God, a true Notion of Virtue and Understanding in various Parts of Learning; which will certainly render me acceptable, on many Occasions; I must therefore applaud that compelling Goodness in you, by which you even obliged me to persevere in learning what I had begun; though then indeed, not considering what I should afterwards reap from it, I imputed it to you as Harshness and Severity.

Let mistaken Youth consider, that, being ignorant in their tender Age of what is good and commendable, they ought to submit to the mature Judgments of their Parents, who are always studying their Welfare, though they cannot perceive it. What shall I say more! I can only return all possible Thanks to you, who, next to the Love and Mercies of the Almighty, are the Authors both of my Being and Happiness, who am, *With all due Respect,*

Your most dutiful and obedient Son,

May 8th, 1764.

T. TURNER.

A N O T H E R.

Honoured Sir,

I AM highly obliged to you for all your Favours; and can only hope, that the Progress I make in my Learning will be no disagreeable Return. Gratitude, Duty, and a View of future Advantages, all conspire to make me thoroughly sensible how much I ought to labour for my own Improvement, and your Satisfaction, and to shew myself, upon all Occasions,

Eaton School,

Your most obedient Son.

May 8th, 1764.

JOHN WINDSOR.

Postscript. My Uncle Robert would be glad of a Hare the first Opportunity, to oblige a particular Friend.

Note, This is called a Postscript, because written after the Body of the Letter was finished.

*A Letter of Excuse to a Father and Mother.**Honoured Father and Mother,*

THE ill Report that you have heard of me, I suppose, comes from some of my School-Fellows, who either envy my Happiness, or by aggravating my Faults, hope to appear less criminal themselves. I must indeed confess, that I have been too remiss in my Studies; but when I consider the Time and Credit I have lost by that Neglect, the first being irrecoverable, my double Diligence for the future, I hope, will regain the last, and I have still Leave to subscribe myself,

*Your dutiful Son,**May 24th, 1764.*

JAMES LOWE.

*A Letter from an elder Brother to a younger, exhorting him to good Behaviour and seemly Carriage.**Dear Brother,*

YOU are now arrived at sufficient Years of Discretion: give me Leave therefore to put you in Mind, that your childish Affairs ought now to be laid aside, and more serious Thoughts and Subjects supply their Place. This will add to the Reputation of our Family, and procure to yourself the Character of being virtuous; an Acquisition of the greatest Value, being the chief Ornament of Youth and Age.

Nor would I have you take this Admonition amiss, or consider it as out of Season; but what it really is, the true Sense and cordial Desire of him who loves you, and wishes your Advancement and Welfare equally with his own; desiring nothing more, than to see you thrive both in Wealth and Reputation. I have therefore good Reason to hope, that this Advice will not be taken amiss, nor create any Misunderstanding between us; but rather augment that fraternal Love which has hitherto subsisted between us, and I hope will long continue; I am sure it will on the Part of

*Your very loving Brother,**June 28th, 1764.*

W. PHILIPS.

A Letter

A Letter from a Father to his Son just beginning the World.

Dear George,

AS you are now, as it were, beginning Life, and will probably have considerable Dealings in your Business, the frequent Occasions you will have for Advice from others, will render you desirous of singling out, among your most intimate Acquaintance, one or two whom you would wish to consider in the Light of Friends.

But your utmost Care and Caution will be necessary in your Choice of these; for you can hardly conceive the terrible Effects you may hereafter feel from a Mistake in this Particular. It will therefore be proper for you to form a Judgment of those who are fit to be your Advisers, by the Conduct they have observed in their own Affairs, and the Reputation they bear in the World. For he who has by his own Indiscretions ruined himself is much fitter to be set up as a Sea-mark for the prudent Mariner to avoid his Courses, than an Example to follow.

Old-age is generally slow and heavy; Youth head-strong and precipitate; but there are old Men, who are full of Vivacity, and young Men replete with Discretion; you should therefore be more careful in considering the Conduct than the Age of the Persons with whom you intend to associate: But, after all, it is to me a certain Sign of Prudence and Virtue in a young Man, when the Aged are pleased with his Company, and he delights in theirs.

Let it therefore be your constant Endeavour to connect yourself with Men of Sobriety, good Sense, and Virtue; for the ancient Proverb is undoubtedly founded on Truth: "a Man is known by his Company." If you can single out such Men, you will at once improve by their Conversation, and profit by their Advice: And be sure to remember one Thing, that though you must be free and unreserved in delivering your Sentiments when Occasion offers, yet you should be much readier to hear than speak; and hence it was wisely observed by one of the Ancients, that Nature has given Man two Ears, and but one Tongue. Lay up therefore, by prudent Observation and a modest Silence, such a Stock of Ideas, that you may, at their Time of Life, make as respectable a Figure as they do at present; and endeavour to profit by the Misfortunes of

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others, rather than by your own. A silent Youth generally makes a wise old Man, and never fails of Respect from the best and most prudent of the human Race. When therefore you happen to be in the Company of Strangers, hear every one speak before you deliver your own Sentiments; for by this Means you will be able to judge of the Merit and Capacities of your Company, and, at the same Time, avoid exposing yourself, as has too often happened to the forward Speaker.

Thus have I thrown together a few Thoughts as they occurred to me, which may suffice for the present to shew my Care and Concern for your Welfare. I hope you will constantly communicate to me whatever you may think worthy of my Notice, or wherein my Advice may be of Use to you; for I have no Pleasure in this Life equal to that which flows from the Happiness of my Children; this I am conscious you know already, and that I am
Your affectionate Father.

A Letter to a Friend.

Dear Friend,

YOUR Letter of the 9th Instant gave me the greatest Pleasure, because you were so kind as to put it in my Power to do you some trifling Service, which afforded me an immediate Opportunity of giving you some Proof of my Friendship, nor indeed could you have required it at a more seasonable Time; accordingly I have sent by the Bearer what you desired, and shall always be glad to oblige you in this Kind, as far as my Ability will extend. I shall only beg Leave to add my sincere Wishes for your Prosperity, and that I am

Your unfeigned Friend,

June 27th, 1764.

JASPER SAMM.

CONGRATULATORY LETTERS.

S I R,

DO not admire that I am one of the last to congratulate with you on your good Fortune: The Joy which I conceived was so extreme, that it would not sooner afford me the Liberty of acquitting myself. I know, that most of your Friends have prevented me; but as their Satisfaction is small, I do not wonder that their Diligence is greater. As for my Part, my Silence increaseth my Merit,
since

since Time and Protraction proceeded only from the Excess of Gladness in the Breast of, *S I R,*

Your most humble Servant.

A N O T H E R.

S I R,

SINCE you doubt not my Friendship, you will easily believe, that I was extremely sensible of the good Fortune which hath lately attended you: But I must tell you, that as your Merit made me foresee it in you long before it happened, so I was far from being astonished at the first Recital. I wish you daily the like, or greater Advancements, being able, only by Prayers for your Happiness, to acquit myself of the great Debt I owe you: Yet how unfortunate, or unprofitable soever I be, do not cease to continue me in the Number of,

S I R,

Your most obedient and faithful Servant.

ANSWERS to the LETTERS of CONGRATULATION.

S I R,

SINCE you take Part in the good Fortune which has befallen me, it is reasonable you should also participate in the Advantage of the new Credit which it has occasioned. This I mention, that you may not slip any Opportunity that offers of procuring a Proof of my Friendship, nor forget this necessary Advice; for, believe me, I am impatient of having an Opportunity of shewing you how much I am,

S I R,

Your Friend and Servant.

A N O T H E R.

S I R,

YOU seem to take Pleasure only in giving me daily new Proofs of your Friendship, as if I were capable of entertaining the least Doubt of it. I know you could not be so noble as you are, except you participated in the Content I received from the happy Success of my Affairs. And besides professing to love me, equal to the Height I honour you, I know there was Reason for your Satisfaction, and

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and that you should be extremely sensible of the good Fortune of,

S I R,

Your most humble Servant.

A Letter of Thanks, &c.

S I R,

I Received the Favour of your's with a Kind of Present; and know no other Way of shewing my Gratitude, than by returning my hearty Thanks. Every Thing you do carries a Charm with it; your Manner of doing it is as agreeable as the Thing itself. In short, Sir, my Heart is full, and would overflow in your Praise, did I not stop, and subscribe myself

Your most obliged,

May 13th, 1764.

and obedient humble Servant,

JOHN WATTS.

A Letter from a Brother at home to his Sister abroad on a Visit, complaining of her not writing.

Dear Sister,

YOU cannot conceive how unkind it is taken by every body here, that we so seldom hear from you; my Mother in particular is greatly displeased, and says you are a very idle Girl; my Aunt is of the same Opinion; nor does any, except myself, endeavour to find Excuses for you; but I beg you will immediately free me from that Trouble, and for the future take Care to deserve a better Character, which you may easily do by writing soon and often. You are very sensible how very dear you are to us all; think therefore with yourself, whether it be right to omit giving us the only Satisfaction that Absence affords to real Friends, which is often to hear from one another.

Our best Respects to Mr. and Mrs. Herbert, and Compliments to all Friends.

From your very affectionate Brother.

His Sister's Answer.

Dear Brother,

I Will not attempt to offer Excuses, but ingenuously own my Fault, thank you for your kind Reproof, and, in Return, promise you never to be guilty of the like again.

I write

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I write this immediately on the Receipt of your's, to beg my Mamma's Pardon, which you, I know, can procure, as also my Aunt's, on this Promise of Amendment; I hope you will continue to excuse all my little Omissions, and be assured I shall never be so forgetful of myself, as to neglect my Duty designedly. I shall certainly write next Post to my Mamma: This is just going, which obliges me to conclude with my Duty to Mamma, and sincere Respects to all Friends,

Your ever affectionate Sister.

A Letter requiring the Payment of Money, which serves as an Acquittance.

S I R,

I FIND, upon stating the Account between us, that several considerable Sums of Money are due to me from you; and, having Occasion for Twenty Pounds, I desire you to send it me by the Bearer hereof, (*or here name the Carrier*) and in so doing you will very much oblige me.

As for the Payment of it, this Letter, and the Bearer's Acquittance, shall be your sufficient Security and Discharge for so much Money. In Witness whereof, I have hereunto set my Hand this 6th Day of May, 1764.

JOHN CHAPMAN.

An Answer to the last Letter.

S I R,

I SENT by the Bearer (*or the Carrier*) Twenty Pounds, according to your Desire, and have taken his Receipt for it; but, because you know I send but for small Parcels of Goods at a Time, I therefore desire you always for the future, when I send you Money, that you mention in the Acquittances the Names of the Goods for which you received the Money, or, at least, I would have you to mention what Money remains unpaid; for, thro' Want of such certain Knowledge, some poor Country Tradesmen have suffered considerable Loss, either by the Master or their Apprentices receiving the Money sent, and not mentioning for what Goods. Pray take it not ill that I thus write, for I am satisfied of your honest Dealing; but know not the
Servants

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Servants you may intrust to receive the Money I send in small Parcels. I remain,

Your Friend and Chapman,

May 20th, 1764.

W. LOVEJOY.

A Letter from an elder Brother in the Country, to his younger Brother, an Apprentice in London.

Dear Brother,

I AM very glad to hear you are pleased with the new Situation in which the Care of your Friends has placed you; but I would not have you pleased with the Novelty of it only; I would have you also pleased with its real Advantage. It is natural for a Person of your Age to rejoice at being more free from Restraint, for a Master has neither Cause nor Inclination for watching over the Actions of a Youth with that assiduous Care as his Parents: But, if you are not careful, this very Particular, which now perhaps gives you a childish Satisfaction, may at last prove the Cause of your Misfortunes, if not your Ruin. You are indeed separated from your Father, but I beg, my dear Brother, that you would always act the same as if you were in his Presence: And be assured, that what would not offend him, will never displease any body.

You have more Sense, I have often told you so, than most Persons of your Age. Now is the Opportunity of making a good Use of it; and remember that every right Step you now take, will be a Comfort to you during your whole Life. I would have your Reason as well as your Fancy pleased with your new Situation, and then you will act as becomes you. Consider, Brother, that the State of Life that now so charms you, will produce Independence and Affluence; and that you will by now behaving as you ought, be shortly yourself Master of a House and Family, have every Thing about you at your own Command, and have Apprentices as well as Servants to attend you. The Master, with whom you are placed, was some Years ago in your Situation, and what should hinder you from being hereafter in his! Nothing is required but Patience and Industry, and with these alone you may purchase so comfortable a Condition.

Farewell, my dearest Brother: Obey your Master, and be civil to every body. Keep yourself as much as possible from

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from Company; for most you will meet with are very bad. Be careful and honest, and then you need not fear a Blessing from above. If ever you commit a Fault, be sure to confess it immediately; for the Lye in d'nying it is worse than the Thing itself. Go constantly to Church, and write to us often. I need not add any Thing more to so good a Lad as you are, to induce you to continue so. And I am sure it will be no Compliment to tell you that I am

Your affectionate Brother.

A Letter of Excuse from a Nephew to an Uncle.

S I R, [or *Loving Uncle,*]

I Received your Letter, and find by the Contents, that I have been represented to you as one of vile and wicked Principles. Indeed, I dare not pretend to excuse all those Follies, and youthful Frailties, of which, in some Measure I have been guilty, though they have been greatly aggravated by such as envy me, far beyond what they really were. Your Rebuke, however, is not unseasonable, and the rather, because I consider it as proceeding from the Desire you have of my Welfare; which obliges me, if I have hitherto offended you in any Thing, to beg your Pardon, and to give you my Promise, that for the future I will make it my Study to reform, and regain by my subsequent Behaviour, the Reputation I have lost by my doing otherwise. Give me Leave therefore, loving Uncle, to assure you, that I remain

Your most obliged Nephew,

R. M.

A Letter from a Servant, in his Master's Absence, to one of his Country Customers.

Mr. Thomas Norton,

S I R,

London, December 7th, 1764.

I Received your's, and for Answer say, I am very sorry to hear that the Goods have not answered your Expectation; however have placed them to the Credit of our Account, and return'd you others by *Thomas Hobbs*, the Carrier. I know my Master would willingly oblige you

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you in any Thing in his Power, and as his faithful Servant I have also done my utmost to give you Satisfaction, who am

Your most humble Servant.

JOHN WINDSOR,

A Letter from a Niece to her Aunt.

Madam,

London, December 7th, 1764.

THE Trouble I have already given you puts me to the Blush, when I think of intruding again on your Goodness; but Necessity, which frequently puts us upon what we should otherwise avoid, and forces us against our Inclinations, is now the Motive that induces me to be thus troublesome. Pray, Dear Madam, excuse me, if I once more beg your Assistance in this Time of my unlucky Misfortune, and I shall ever have a grateful Remembrance of your Goodness to me; and, I hope, I shall be, one Time or other, in a Capacity of making some Returns for the many Obligations your Goodness hath conferred upon

Your most respectful Niece, and humble Servant,

ANNE ROBERTS.

A Brother to a Sister.

Dear Sister,

YOUR long Absence and great Distance from me, tho' I have not wanted good Company, make me very solicitous with regard to your Welfare; natural Affection inclines me strongly to have you in Remembrance, and to consider your Health and Welfare in every Respect as dear as my own; nor is there any Thing in my Power, but, if you request, it shall be freely your's. Notwithstanding the Distance I am now from you, I purpose to make you a Visit very shortly, and had done it before now, but an urgent Occasion interposed, the Particulars of which, being too long for a Letter, I shall acquaint you of when I see you. I have nothing farther to add, but to desire you to give my due Respects to all Friends, particularly to Mr. T. and to believe me,

Dear Sister,

Your affectionate Brother, and humble Servant,

HENRY HOPE

A Letter

A Letter from a Youth at School in London to his Parents in the Country.

London, December 6th, 1764.

Honoured Father and Mother,

I Received your kind Letter of the 24th of November past, and also the several Things therein mentioned, by the *Chichester* Carrier, for which I return you my most humble and hearty Thanks: They came very seasonably to the Relief of my Occasions.—I begin to make pretty good Improvement in my Learning now, tho' at the first it seemed a little hard and irksome, and I hope to gain the Point at last for which you sent me hither. Pray accept of my most humble Duty to yourselves, and give my kind Love to my Brothers and Sisters, and to my old Play-Fellows and Neighbours, and believe me,

*Honoured Parents,
Your dutiful Son,
STEPHEN WRIGHT.*

From an Apprentice to his Friends.

Honoured Father and Mother,

I AM, by your good Care and Conduct, well settled, and pleased with my Station; so that Duty obliges me to return your my hearty Thanks in a grateful Acknowledgment of your Love and tender Care of me: I will endeavour to go through my Business chearfully; and, having begun well, I hope I shall persevere to do so to the End, that I may be a Comfort to you hereafter, and in some Measure make a Return of your Love and Kindness to me, who am

*Your most dutiful and obedient Son and Servant,
DANIEL DAVIS.*

A Letter of Recommendation.

S I R,

THE Bearer hereof, *Francis Rogers*, I send to you as one whose Honesty you may rely on. My Experience of his Conduct and Fidelity gives me a certain Kind of Confidence in recommending him to you; and as you know me, Sir, I believe you cannot in the least think that I would

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I would recommend any one to you, if I had the least Suspicion or Doubt concerning their Probity.

I am, S I R,

Your real Friend and humble Servant,
GEORGE JAMES.

A Daughter to a Mother in relation to Marriage.

Honoured Mother,

IT is with the greatest Duty, Humility and Respect, that I now address myself to you, as I would add nothing material without your Knowledge, Consent, and Approbation: I thought it therefore my Duty to acquaint you of a Matter of the greatest Weight and Importance: Pardon me, if I blush to name it; it is Marriage. The Person, I think, is well deserving of me, or one much better: It is Mr. A. B. of C. You know both him and his Character; he is sober, diligent, and good-humour'd. I shall however readily submit to your good Pleasure and Direction in an Affair of such Concern, and remain,

Honoured Mother,

Your dutiful Daughter,

And very humble Servant,

MARY MEAD.

To a Country Chapman.

Mr. Francis Pitt,

S I R,

London, December 8th, 1764.

YOU and I have formerly had Trading together, and it is not my Fault that we do not continue so to do; for assure yourself, I have a great Value and Respect for you, and on that Account none shall be more ready to oblige in what I may. Let us therefore once more reassume our Dealings together, and you shall find, that for any Goods you have Occasion for in my Way, none shall use you more kindly than,

S I R,

Your real Friend and humble Servant,

THOMAS SHAD.

A Letter

A Letter by Way of Petition to a Friend.

Honoured Sir,

I AM uncertain whether my late Misfortunes have reached your Ear. I however most humbly presume on your good Nature, being assured, by sundry Examples of your Compassion, that you will think of, and pity the Distressed; therefore, as an Object truly deserving Compassion, I most humbly implore and petition you to consider the many Losses and Disappointments I have met with in my unlucky and vexatious Fortune, which have reduced me to such necessitous Circumstances that I cannot possibly proceed in my Affairs: You was pleased once to style me your Friend, and so I really was; and would now shew it, by a signal Proof of Kindness, if our Circumstances were changed, by standing between you and Misfortune, and screening you from the malevolent and inauspicious Influences of unfriendly Stars: I doubt not, Sir, but your Generosity and Goodness are equally great; and I hope, with all Humility, you will be pleased to interpose your good Offices between unlucky Fortune, and,

S I R,

Your very humble Servant,

LAURENCE LANE.

A Letter to a Friend, to desire him to endeavour to end a Difference.

Living Cousin,

TWO of our Friends, *A. B.* and *C. D.* are going to Law upon a trifling Occasion. Let me beg you to come over and endeavour to reconcile them, or send your Advice how I may labour to do it, and I shall be very much obliged to you. I remain

Your affectionate Kinsman, and humble Servant,

E. E.

The Answer, with Advice.

Dear Cousin,

I Received your Letter, and must own, that it grieves me to hear our Friends should be for going to Law, without the least Necessity; for much Money will be spent upon Lawyers,

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Lawyers, to end their Differences by Jurymen, when two Friends may do it much better.

But if one of the Parties is for going to Law, and the other not, the latter is the better Christian, and not to be blamed, though he use the Law of his Country to defend himself; neither, indeed, can he avoid it, if his Adversary seeks Revenge, and forces him to spend his Money in his Defence.

But as you desire my Advice about reconciling these two Friends, who have not yet see'd Lawyers, persuade the Man that is for going to Law, that two Friends chosen by both Parties may easily end their Differences.

When they have nominated two, then persuade the two Parties to put into the Hands of those Arbitrators 40s. or more, a-piece, according to the Value of the Trespasse. This agreed on, next,

Let the Parties sign and seal general Releases to each other, and the Arbitrators dispose of what Money they think proper to the Party that received the Injury.

Thus Differences among Friends may be terminated at a much cheaper and better Rate than by Trial at the Assizes.

Besides, having general Releases, it cuts off all former Differences, and saves various Expences arising from Bonds of Arbitration and Awards, which, though they cost Money, often prove of no Effect.

Would to God the Advice above, of reconciling Men at Difference, would take Effect in general, then would Peace flourish, &c.

I remain your Friend,

W. M.

A Letter from an Apprentice to his Friends in the Country.

Honoured Father and Mother,

THE Bearer, *George Stavely*, coming to see me last Night, told me he was going this Morning to our Town; I would not therefore omit this Opportunity to let you know, that I am very well in Health, and like both my Master and Mistress, and my Trade also very well; and do intend, with God's Assistance, to use my utmost Endeavour to do every Thing that belongs to it with thankfulness, that I may both please my Master, and answer your End in placing me here; which, I presume, was, that

I might

I might be in a Capacity to get my own Living, as I hope I shall. Pray accept my humble Duty to yourselves, and remember my kind Love to my Brother and Sisters, Aunts, and Cousins ; and believe me

Your ever dutiful and obedient Son,

R. T.

A Letter of CONSOLATION to a Lady, on the Death of her Brother.

Madam,

THough I must acknowledge, that to be insensible under so great a Loss as you have lately sustained in your dear Brother, would be such a Piece of Stupidity, as could by no Means be justified, yet there is a vast deal of Difference between being insensible, and falling into an Excess of Grief. To be sensible of God's afflicting Hand in such a Dispensation, and to humble ourselves under it, is what we ought to do ; but to be inconsolable under such a Stroke is as if we intended to fall out with Heaven, instead of submitting to the Will of God. That you might not therefore, Madam, add Sin to your Affliction, by an immoderate Mourning for the Loss of your Brother ; be pleased to consider, that you have no Reason to mourn as those that have no Hope ; his well known Piety, and strict Virtue, both living and dying, removed all Fears on that Account. Consider also, that this excessive Grief is only the Product of Self-Love ; you mourn your Loss, not his ; for Death to him is Gain. And, if the Bless'd above know the Transactions of their Friends below, your Grief for him would but impair his Happiness : Consider also, Madam, that all in him that was desirable and lovely, was but an Emanation from the Fountain of all Perfections, where all your Wants may be continually supplied : For God is an inexhaustible and overflowing Fountain, and what wise Person would grieve because the Stream is dried up, when there is a living Fountain open to repair to ? Consider likewise, that all your Tears are vain ; for, could you weep the Ocean full, they would never bring him back, Fate itself not being so fixed as he. Dry up therefore, Madam, your Tears, and rejoice ; rejoice that he has satisfied the Debt, that, by the irrevocable Decree of Heaven, must first or last be paid by every Mortal. Rejoice that he has passed the dismal Gulf, and landed safe on the celestial Shore :

And

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And that, whilst you are making Lamentations on Earth, he is employed in eternal Hallelujahs in Heaven: Where, when you late shall follow him, that you may join in the same blessed Concert, shall be the daily Prayers of,

Madam,

Your sincere Friend and humble Servant,

W. W.

A Letter from a Gentleman to a Gentlewoman, to beg Pardon for an Offence.

Madam,

TIS in vain to contend with my Judge; and therefore though I know my Fault has been aggravated beyond what it would justly bear, yet I will rather submit myself to your Sentence, than attempt to extenuate my Crime. I am sufficiently guilty to have offended you, though I never designed it: and when you have done yourself Justice, by inflicting upon me what you think I merit for my Offence, I will then plead my Innocency, and let you know I always was so far from saying any Thing that might reflect upon your Fame, that, in my Opinion, not Innocence itself is more unspotted, nor can unsullied Snow appear whiter. 'Tis true, I am guilty for giving you Reason to think I have offended; tho' my Offence is my Misfortune, rather than my Fault. But, Madam, what if I appeal from your severer Justice to your Mercy? I know you are not inexorable, nor did you suck the Breasts of Wolves and Tygers: And, since there is so much Sweetness in your Eyes, there must certainly be some Pity in your Heart, at least so far as to forgive a poor repenting Criminal. And, since you excite so bright an Idea of the Author of all Goodness, you cannot but, like him, delight in shewing Mercy. I shall henceforth endeavour to be like *Cæsar's* Wife, not only free from Guilt, but from Suspicion: And further shall, to expiate my Offence, remain

Your truly sorrowful,

And much afflicted humble Servant,

T. D.

The Answer to the foregoing Letter.

S I R,

I Received your Letter, and must let you know, that whatsoever reflects upon my Fame, which is far dearer to me than Life, tho' at the most remote Distance, is what I cannot but think a Fault, and therefore know not how you can be innocent; and, certainly, to plead your Innocence is to accuse me of Injustice, in charging you with a Crime. Indeed, from what you write, I am inclined to believe, that in what you said you designed me no Injury; and that your Crime of Inadvertence rather than of Malice. And for that Reason, upon your Profession of Repentance, I freely pardon you; but Charity itself does not enjoin me to hate the Man I pardon in my Bosom. You must not expect therefore to be admitted to the former Freedoms you enjoy'd, since you have made so ill a Use of 'em, till you have given some more substantial Proofs of the Sincerity of your Repentance. And, tho' I pardon this your first Offence, yet, if you should relapse into your former Follies, you must expect a much severer Treatment: For then I shall no more esteem myself, as now I do,

Your reconciled Friend to serve you,

M. S.

A Letter from a Nephew to his Uncle.

Most kind and honoured Uncle,

THE many Obligations you have laid upon me, compel me to lay myself at your Feet, and make you my Tender of my humblest Service; which, if you have Opportunity, shall amount to more than Words; for I am ambitious to imitate you, and to make good my Words by correspondent Actions. I am, in the mean Time, cordially praying for your Health and Happiness, expecting your Commands; which I will obey according to the utmost of my Power, and always remain

Your truly humble and obliged Nephew,

J. D.

The

*The Uncle's Answer to his Nephew.**Kind Nephew,*

I Received your's of the 12th Instant, and take the Expressions of your Kindness to come as gratefully as you intended them, assuring you, that tho' I am pleased with the Acknowledgements you may have made me in your Letter and the Offers you insinuate of a Requitall, yet I neither expect nor desire it: But, on the contrary, if at any Time you will be, so kind to let me know wherein I can serve you none shall be more ready than

Your loving and affectionate Uncle,

B. L.

Precedents in Law and Business, that all young Men should know and be acquainted with.

Superscriptions for Letters.

TO the King; or, To the King's most excellent Majesty
To the Queen; or, To the Queen's most excellent Majesty.

To the Prince; or, To his Royal Highness To the Princess; or, To her Royal Highness.

And in Case of the Lords Spiritual, *viz.* To his Grace the Lord Archbishop of *Canterbury*; To the Most Reverend Father in God, &c. The same to the Archbishop of *York*. If to the other Bishops, To the Right Reverend Father in God, *Thomas*, Lord Bishop of, &c. And to the inferior Clergy; To the Reverend Doctor, &c. To the Reverend Mr. &c.

To write to Temporal Lords, *viz.*

To his Grace the Duke of, &c.

To the Right Honourable the Marquis of _____

To the Right Honourable the Earl of _____

To the Right Honourable the Lord Viscount _____

To the Right Honourable the Lord _____

All the Sons of the Nobility, though not the immediate Heirs, are to be dignified with the Title of Honourable as their Due by Birth-Right. And to a Knight and Baron

by virtue of his Patent, the Title of Honourable and Right Worshipful is given. As likewise the former to a Knight, and Worshipful to an Esquire.

Every Privy-Counsellor, though not a Nobleman, is stiled Right Honourable. All Ambassadors have the Stile of Excellency; as likewise hath the Lord Lieutenant of *Ireland*, and the Captain-General of his Majesty's Forces when in Being; nor has the Lord Mayor of *London*, during his Mayoralty, a less Title than Right Honourable; and the Sheriffs, during that Office, are stiled Right Worshipful; nor does any Thing less than the Title of Esquire extend to the Mayors of any Corporation during their Office.

Lastly, for the Beginning of Letters.

TO the King; Sir, or, May it please your Majesty.

To the Queen; Madam, or, May it please your Majesty.

To the Prince; Sir, or, May it please your Royal Highness.

To the Princess; Madam, or, May it please your Royal Highness.

To a Duke; My Lord, or, May it please your Grace.

To a Dutches; Madam, or, May it please your Grace.

To a Marquis; My Lord, or, May it please your Lordship.

To a Marchioness; Madam, or, May it please your Ladyship.

To an Earl, Viscount, or Baron; Right Honourable, or, May it please your Lordship. *In Viscount or Viscountess and not the s in the first Syllable.*

To a Countess, Viscountess, or Baroness; Madam, or, Right Honourable; or, May it please your Ladyship.

To a Knight; Sir, or Right Worshipful; and to his Lady; Madam, or, May it please your Ladyship.

To a Mayor, Justice of Peace, Esquire, &c. Sir, or, May it please your Worship.

At subscribing your Name, end with the same Title you began with; as, my Lord, your Lordship's, &c.

A Form of a Will, a Man having no Children.

IN the Name of God, Amen. I *Thomas Man*, f — in the County of —, Yeoman, being of sound and disposing

E

posing

posing Mind and Memory, do make and ordain this my Last Will and Testament, in Manner and Form following: That is to say, First, I Will, that all my Debts and Funeral Charges be paid and discharged by my Executrix herein after named. Also, I give and bequeath unto my Cousin — of —, the Sum of Ten Pounds, of lawful Money of *Great Britain*. Also, I do give and demise unto — my Brother's Son, ail that Cottage, or Tenement, situate in the Parish of — * in the County of —, now in the Occupation of — with the Close adjoining to it, to the said —, his Heirs and Assigns for ever. Also, I do give unto —, my loving Wife, all the rest of my Goods and Chattels, and personal Estate whatsoever. Also, I do give and demise unto — my said Wife, her Heirs and Assigns for ever, all my Lands and Tenements lying in the Parish of — in the County of — and now in the several Occupations of — and — or their under Tenants. And also, the Messuage or Tenement, situate in the Parish of — in the said Town of — and now in my own Occupation, together with the Orchard, and all the other Appurtenances thereunto belonging. *Lastly*, I do make and constitute — my said Wife Executrix of this my Last Will and Testament. Dated this — Day of —, in the Year of our Lord, 1774.

Note, There must be three Witnesses to the above Will, because there is a Devise of Lands.

Note, That a Man may give his Goods to any Person by Word of Mouth, before three Witnesses, before his Death; but 'tis much more secure to do it by Deed of Gift in Writing, in some such-like Form as this following.

A Deed of Gift of Goods.

TO all People unto whom this present Writing shall come; I *A. B.* of, *Es.* send Greeting: Know ye, that I the said *A. B.* for divers good Causes, and valuable Considerations me hereunto moving, have given and granted, and by these Presents do give, grant, and confirm unto *C. D.* of, *Es.* all and singular my Goods, Chattels, Household-stuff, and all other my Substance whatsoever, in whose Hands, Custody, Possession, or Keeping soever, the

same are, or can, or may be found, to have and to hold, all and singular the said Goods, Chattels, and Household-stuff whatsoever of me the said *A. B.* unto the said *C. D.* his Executors, Administrators and Assigns, from henceforth to his and their own proper Use and Uses thereof, and therewith to do, order and dispose, at his or their Wills and Pleasure, as of their own proper Goods and Chattels, freely, and peaceably, and quietly, without any Manner of Lett, Trouble, or Denial of me the said *A. B.* or any other Person or Persons whatsoever: Of all which Premises I the said *A. B.* have put the said *C. D.* in full and peaceable possession by virtue hereof. In Witness whereof, I the said *A. B.* have hereunto set my Hand and Seal the 21st of May 1774.

Sealed and delivered (being first legally stamped) in the Presence of —

OBSERVE. *Objection.* The Deed is not good, some say, if the Giver useth the Goods. *Ans.* But may not the Goods be lent him by the Receiver?

A Codicil, or Schedule to a Will, made after a Will is sealed, &c.

BE it known unto all Men by these Presents, That I *A. B.* of, &c. Yeoman, have made and declared that my Last Will and Testament in Writing, bearing Date, &c. the said *A. B.* do, by these Presents contained in this Codicil confirm and ratify my said Last Will, and do give and bequeath unto *J. E.* of, &c. And my Will and Meaning is, that this Codicil or Schedule be esteemed and adjudged to be Part or Parcel of my said Will and Testament, and that all Things therein contained and mentioned be faithfully performed, in as full and ample Manner, in every Respect, as if the same were so declared and set down in my said Will. In Witness whereof, I the said *A. B.* have hereunto set my Hand and Seal the 1st Day of May, 1774.

Another Will.

IN the Name of God, Amen, I *W. M.* of, &c. being, thro' the abundant Mercy and Goodness of God, tho' weak in Body, yet of a sound and perfect Understanding

and Memory, do constitute this my Last Will and Testament, and desire it may be received by all as such : First, I most humbly bequeath my Soul to God my Maker, beseeching his most gracious Acceptance of it, through the all-sufficient Merits and Mediation of my most compassionate Redeemer Jesus Christ, who gave himself to be an Atonement for my Sins, and is able to save, to the uttermost, all that come unto God by him, seeing he ever liveth to make Intercession for them, and who, I trust, will not reject me a returning penitent Sinner, when I come to him for Mercy ; in this Hope and Confidence I render up my Soul with Comfort, humbly beseeching the most blessed and glorious Trinity, one God most holy, most merciful and gracious, to prepare me for the Time of my Dissolution, and then to take me to himself into that Peace and Rest, and incomparable Felicity, which he has prepared for all that love and fear his holy Name, Amen, blessed be God. I give my Body to the Earth, from whence it was taken, in full Assurance of its Resurrection from thence at the Last Day. As for my Burial, I desire it may be decent, without Pomp or State, at the Discretion of my dear Wife, and my Executors hereafter named, who, I doubt not, will manage it with all requisite Prudence. As to my worldly Estate, I will and positively order, That all my Debts be paid. First, I give to my dear and loving Wife for the Term of her Life, this House wherein I now dwell with all the Furniture, and the Lands and Tenements that lie about it ; and, after her Death, to my only Son S. and his Heirs and Assigns for ever ; to whom I leave also, from the Time of my Death, my other two Estates situate in the Parish of N. he paying to each of his Sisters C. and H. 1000 *l.* And if he die before them, and without Issue, then his Land (all but the Value of 1000 *l.* which I freely empower him to dispose of as he shall think fit) shall descend, and belong equally to those my two Daughters. My poor Debtors, who owe me some small Matters, which, because they are low in Condition, and not well able to pay them, I freely remit them all, forgiving such my Debts, I desire God would forgive my Debts for Christ's Sake. I give 50 *l.* to be distributed, according to the Discretion of my Executors, among such of my Neighbours of this Parish, as they shall apprehend most to want such Assistance ; but who do not at present receive Alms, nor have any

lowan

allowance from the Parish. I give 20*l.* towards that good Work for teaching poor Children to read, and to say their Catechism, in Charity-Schools. The small Remainder of my Estate I give to my very good Friends, and dear and kind Relations *S. T.* and *H. M.* to be divided equally between them: And do constitute them Executors of this my Last Will and Testament, and Trustees for my Wife and Children. In Witness whereof I have hereunto set my Hand and Seal, the Third Day of *May*, in the Year of our Lord. 1774.

Witnesses, *R. S.*
G. A.
F. G.

W. M. (L. S.) Here I take off my Seal, and do declare this to be my Last Will and Testament.

OBSERVATIONS.  *Note*, That the Party who signs and seals this Will, is to do it in the Presence of three Witnesses, who are to set their Hands to it, (not under three) and it is not much Matter whether the Witnesses hear the Will read or no, so as they hear the Party say he acknowledgeth that Writing to be his Will, to which he sets his Hand and Seal; for if they did hear it read, it cannot be supposed that they can remember the Contents thereof. A Man above fourteen Years of Age may make a Will of his Goods; and a Woman above twelve. But neither can will their Lands until twenty-one Years.

If a Man dies without a Will, and leaves both Free-Lands and Goods, his Wife will have the third Part of the Profits of the Land during her Life, and one third Part of the Goods for ever; and the next *akin* to the Husband the other two third Parts. But he that makes a Will, and leaves his Wife a certain Sum to be paid her yearly, during her Life, by his Executor, should also give her some of his moveable Goods.

If a Man dies without a Will signed and sealed, leaving many Children, the eldest Son claims all the Land; but, if he leaves Daughters only, they will be Coheirs to all Free-Land.

Copyhold Land is not given by Will, but pass'd by Surrender in Court.

Wills by Word of Mouth, called Nuncupative Wills, are not good to pass Freehold Land; but for Goods, or Leasehold Land, they often pass the Court for good, if under 30*l.* Value, the Court writing one from the Mouths

of three or four Witnesses, to which they give Oath, and put it in Writing within six Months after the Party's Decease.

To will Lands to *A. B.* for ever ; or to *A. B.* and his Assigns, this is but for Life ; but I give and demise unto *A. B.* his Heirs and Assigns for ever, so *A. B.* may sell it.

The Word Executor is the Name given to him that is to see the Will perform'd : But, if to a Woman, she is called in the Will Executrix.

The Form of a Letter of Attorney, to execute a particular Business.

K NOW all Men by these Presents, That I *J. R.* of *B.* in the County of *B.* Yeoman, for divers good Causes and Considerations me hereunto moving, have made, ordained, constituted, and appointed, and by these Presents do make, ordain, constitute, and appoint, my trusty Friend *W. G.* of *L.* Gent. my true and lawful Attorney, for me in my Name, and to my Use, to ask, demand, recover, and receive of and from *A. C.* of, &c. the Sum of, &c. Giving and by these Presents granting to my said Attorney, my sole and full Power and Authority to take, pursue, and follow such legal Courses for the Recovery, Receiving, and Obtaining of the same, as I myself might, or could do, were I personally present ; and, upon the Receipt of the same, Acquittances, or other sufficient Discharges for me, and in my Name to make, sign, seal, and deliver : As also one or more Attorney or Attornies under him to substitute and appoint, and again at his Pleasure to revoke ; and further to do, perform, and finish for me, and in my Name, all and singular Thing or Things, which shall or may be necessary touching and concerning the Premises, as fully, thoroughly, and entirely, as I the said *J. R.* in my own Person might or could do, in or about the same : Ratifying, allowing, and confirming whatsoever my said Attorney shall lawfully do or cause to be done, in and about the Execution of the Premises, by virtue of these Presents. In Witness whereof, I have hereunto set my Hand and Seal, the 10th Day of *August*, in the 14th Year of the Reign of our Sovereign Lord *GEORGE* the 3d, by the Grace of God, King of Great Britain, &c. and in the Year of our Lord God, 1774.

The Form of a Revocation of a Letter of Attorney.

K NOW all Men by these Presents, That whereas I *H. R.* of *H.* in the County of *G.* Yeoman, upon the Trust and Confidence which I had in *J. G.* of, *Esq.* Gent. by Letter of Attorney under my Hand and Seal, bearing Date, *Esq.* did make, ordain, constitute and appoint the said *J. G.* my lawful Attorney, for me, and in my Name, and to my Use, to ask, demand, recover, and receive, of and from *W. W.* of, *Esq.* Salter, the Sum of, *Esq.* as thereby more at large may appear: Now know ye, that I the said *R. H.* for divers good Causes and Considerations me hereunto moving, have, and by these Presents do revoke, disannul, and make void, the said Letter of Attorney, and all Power and Authority therein to him the said *J. G.* given. In Witness, *Esq.*

The Form of an Indenture for an Apprentice.

T HIS Indenture witnesseth, That *T. G.* Son of *P. G.* *Esq.* doth put himself Apprentice to *G. H.* Tallow-Chandler, to learn his Art or Mystery, and with him, after the Manner of an Apprentice, to serve from the Day of the Date hereof, for and during the Term of Seven Years next ensuing; during all which Term, the said Apprentice his said Master faithfully shall serve, his Secrets keep, and all his lawful Commands every-where gladly do: He shall do no Damage to his said Master, nor see it to be done by others, without letting or giving Notice thereof to his said Master: He shall not waste his said Master's Goods, nor lend them unlawfully to any. He shall not commit Fornication, nor contract Matrimony during the said Term: He shall not play at Cards, Dice, or any other unlawful Game, whereby his said Master may be damaged, with his own Goods, nor the Goods of others: He shall not absent himself Day nor Night from his said Master's Service unlawfully; nor haunt Ale-houses, Taverns, or Play-houses; but in all Things behave himself as a faithful Apprentice, in the Trade or Mystery he now followeth; and the said Master shall procure and provide for him sufficient Meat, Drink, Apparel, Lodging, Washing, and all other Necessaries, during the said Term. And, for the true Performance of all and every the said Covenants and Agreements,

ments, either of the said Parties bindeth himself unto the other firmly by these Presents. In Witness whereof, they have interchangeably set their Hands and Seals hereunto, this twenty-fourth Day of *June*, in the Fourteenth Year of the Reign of our Sovereign Lord *GEORGE* the Third, King of *Great Britain, France, and Ireland, &c.* and in the Year of our Lord, 1774.

A Letter of Attorney from a Seaman.

KNOW all Men by these Presents, That I *H. H. Mariner*, now belonging to His Majesty's Ship the, &c. for divers good Causes and Considerations me hereunto moving, have, and by these Presents do make, ordain, constitute, and appoint my trusty Friend *P. Q. Citizen and Baker of London*, my true and lawful Attorney for me, and in my Name, and for my Use, to ask, demand, and receive of and from the Right Honourable the Treasurer, or Pay-master of His Majesty's Navy, and Commissioners for Prize-Money, and whom else it may concern; as well all such Wages, and Pay, Bounty-Money, Prize-Money, and all other Sum and Sums of Money whatsoever, as now are, and which hereafter shall or may be due or payable unto me; also all such Pensions, Salaries, Smart-Money, and all other Monies and Things whatsoever, which now, or at any Time hereafter, are or shall be due to me for my Service, or otherwise, in any of His Majesty's Ship or Ships, Frigates or Vessels: Giving and hereby granting unto my said Attorney full and whole Power to take, pursue, and follow such legal Ways and Courses for the Recovery, Obtaining, and Discharging the said Sum and Sums of Money, or any of them, as I myself might, or could do, were I personally present. And I do hereby ratify, allow, and confirm, all and whatsoever my said Attorney shall lawfully do, or cause to be done, in and about the Execution of the Premises, by virtue of these Presents. In Witness, &c.

A BOND.

KNOW all Men by these Presents, That I [*Benjamin Burr*, in the County of *Middlesex, Merchant*] am held and firmly bound unto [*William Ward*, of *Sutton Colefield*, in the County of *Warwick, Esq;*] in the Sum of

me Hundred] Pounds of good and lawful Money of Great-Britain, to be paid to the said [William Ward] his Heirs, Executors, Administrators, or Assigns: To which Payment, well and truly to be made, I bind myself, my Heirs, Executors, Administrators, and Assigns, firmly by these Presents. Sealed with my Seal. Dated the [first Day of May] in the [14th] Year of the Reign of our Sovereign Lord [GEORGE the Third] by the Grace of God King of Great Britain, France, and Ireland, Defender of the Faith, and in the Year of our Lord God, [One Thousand seven Hundred and Seventy-four.]

The CONDITION.

THE Condition of this Obligation is such, that if the above-bouden [Benjamin Burr] his Heirs, Executors, or Administrators, do well and truly pay, or cause to be paid, unto the abovementioned [William Ward] his Executors, Administrators, or Assigns, the full Sum of [Fifty Pounds] with lawful Interest for the same, of good and lawful Money of Great-Britain, on the [first Day of November] next ensuing the Date hereof; Then this Obligation to be void, or else to remain in full Force.

Seal'd and deliver'd (being

first legally stamp'd) in

the Prefence of,

A. B.

C. D.

Benjamin Burr, (L. S.)

When a Bond is given in Consideration of the Value received, the Bond is always to be made for double the Value in the Condition.

What is to be varied, and made agreeable to the Circumstances before you, is contained in those Words inserted between [] and in a different Character.

A Condition to stand to the Award of Arbitrators.

THE Condition of this Obligation is such, That if the above-bouden [Benjamin Burr, of London, Merchant] his Heirs, Executors, and Administrators, and every of them, do and shall in all Things well and truly stand to, obey, abide by, perform, fulfil, and keep the Award, Order, Arbitrament, final End and Determination of [Anthony Ayres and Michael Mills, of London, Merchants,] Arbitrators indifferently named, elected, and chosen, as well

on the Part and Behalf of the above-bounden [*Benjamin Burr*] as of the abovenamed [*William Ward*] to arbitrate, award, order, judge, and determine of and concerning all Manner of Action and Actions, Cause and Causes of Actions, Suits, Bills, Bonds, Specialties, Judgments, Executions, Extents, Accounts, Debts, Dues, Sum and Sums of Money, Controversies, Trespasses, Damages, and Demands whatsoever, at any Time or Times heretofore had, made, moved, brought, commenced, sued, prosecuted, done, suffered, committed, or depending by or between the said Parties, so as the Award be made and given up in Writing, under their Hands and Seals, ready to be deliver'd to the said Parties on or before the [*twelfth of September next ensuing the Date above-mentioned:*] But if the said Arbitrators do not make such their Award, of and concerning the Premises, by the Time aforesaid; That then, if the said [*Benjamin Burr*] his Heirs, Executors, and Administrators, for his and their Parts and Behalf, do in all Things well and truly stand to, obey, abide, perform, fulfil, and keep the Award, Order, Arbitrament, Umpirage, final End and Determination [*of Francis Forth, of London, Esq;*] Umpire, indifferently chosen between the two Parties, to end the said Matter and Differences, so as the said Umpire do make his Award or Umpirage, of and concerning the Premises, and deliver the same in Writing under his Hand and Seal, to the said Parties, on or before the [*fourteenth Day of October next ensuing the Date abovesaid:*] Then this Obligation to be void, or else to remain in full Force.

Seal'd and deliver'd (being legally stamp'd) in
Presence of, &c.

Benjamin Burr, (L. S.)

Note, Both the Parties are in this Case to be mutually bound; and, if there be no Umpire admitted of, the latter Part of the Condition, beginning [*But if the said Arbitrators*] is to be omitted.

The Form of an Umpirage of Award.

TO all People to whom this present Writing shall come: I [*Francis Forth, of London, Esq;*] Umpire indifferently chosen between [*Benjamin Burr and William Ward, of London, Merchants,*] send Greeting: Now know ye, that I the said [*Francis Forth*] having deliberately heard and considered

considered, and understood the Grievs, Allegations, and Proofs of both the said Parties; and being willing, as much as in me lieth, to set the said Parties at Unity and good Accord, do by these Presents arbitrate, award, order, deem, decree and judge, that the said [*Benjamin Burr*] his Executors, Administrators, or Assigns, do, and shall well and truly pay, or cause to be paid, unto the said [*William Ward*] his Executors, Administrators, or Assigns, the full Sum of [*one hundred Pounds*] of lawful Money of Great Britain, on the [*tenth Day of November*] next ensuing the Date of these Presents; and that upon Payment thereof, the said [*Benjamin Burr* and *William Ward*] shall, at their own proper Costs and Charges, seal, subscribe, and, as their several Acts and Deeds, deliver each to the other, a general Release in Writing, of all Matters, Actions, Suits, Causes of Actions, Bonds, Bills, Covenants, Controversies, and Demands whatsoever, from the Beginning of the World to the [*first Day of May last past*] and in the [*14th*] Year of our Sovereign Lord [*GEORGE*] King of Great Britain, &c. In Witness whereof I have hereunto set my Hand and Seal, the 14th Day of June, 1774.]

Seal'd and deliver'd, (being duly stamp'd) in Presence of, &c.

Francis Fortb, (L. S.)

A Letter of License to a Debtor.

TO all People to whom this present Writing shall come: We whose Names are hereunder subscribed, and Seals affix'd, Creditors of [*A. B. of London, Merchant,*] send Greeting. Whereas the said [*A. B.*] on the Day of the Date of these Presents, is indebted unto us severally, in divers considerable Sums of Money, which at present he is not able to satisfy unto us, without Respite, and Time to be given unto him for the Payment thereof: *know ye therefore,* That we the said Creditors, for divers good Causes and Considerations us thereunto moving, have given and granted, and by these Presents do give and grant unto the said [*A. B.*] our sure and safe Conduct, and full License, that he the said [*A. B.*] shall and may safely come and go, and resort unto us, and every one of us his Creditors, to compound and take Order with us, and every one of us, for all and every of our said Debts, and

to go about any other Business, to any other Person or Persons whatsoever, without any Trouble, Suit, Arrest, Attachment, or other Molestation to be offer'd or done unto him the said [*A. B.*] his Wares, Goods, Monies, or other Merchandizes whatsoever, by us, or any of us, or by the Heirs, Executors, Administrators, Partners, or Assigns of us, or any of us, or by our, or any of our Means and Procurement, to be sought or procured to be done, from the Day of the Date hereof, unto the full End and Term of [*one whole Year*] next ensuing. And we the said Creditors, whose Names are here underwritten, do hereby covenant and grant, and every one of us for his own Part, his Executors and Administrators, covenanteth and granteth, to and with the said [*A. B.*] that if any Trouble, Wrong, Damage, or Injury, shall be done unto him the said [*A. B.*] either in his Body, Goods, or Chattels, or any of them, within the said Term of [*one Year*] next coming after the Date hereof, by us, or any of us, his said Creditors, or by any other Person or Persons, by or thro' the Procurement, Consent, or Knowledge of us, or any of us, contrary to the true Intent and Meaning of this our present Writing of safe Conduct, that then the said [*A. B.*] by virtue of these Presents, shall be discharged and acquitted for ever, towards and against him and them, of us, him and his Heirs, Executors, Administrators, Partners or Assigns, and every one of them, by whom, and by whose Means he shall be arrested, troubled, and attacked, or damnified, of all Manner of Actions, Suits, Quarrels, Debts, and Demands, either in Law or Equity, from the Beginning of the World, to the Day of the Date hereof: In Witness whereof, we have hereunto set our Hands and Seals the [*Fourth Day of May,*] 1774.

Seal'd and deliver'd (being first duly stamped)
in Presence of, &c.

R. D. (L. S.)
P. Q. (L. S.)
E. L. (L. S.)

A Bill of Sale.

K NOW all Persons, whom it may concern, That [*John Nokes, of Norwich in the County of Norfolk Goldsmith,*] for and in Consideration of the Sum of [*Fifty Pounds*] of lawful Money of Great Britain, to me in Hand paid, by [*Daniel Dunn, of London, Esq;* the Receipt where

of I do hereby acknowledge, have bargain'd, sold, and delivered, and by these Presents, according to the due Form of Law, do bargain, sell, and deliver unto the said [Daniel Dunn, four Caracts of Oriental Pearl; nine Grains of brait Diamonds; one Silver Teapot, Weight twenty Ounces; one Silver Salver, Weight ten Ounces; two Sets of Silver Casters, Weight thirty Ounces; and ten *Cornelian* Rings, sealed up by Consent with my Seal.] To have and to hold the said bargain'd Premises unto the said [Daniel Dunn] his Executors, Administrators, and Assigns, for ever. And I the said [John Nokes] for myself, my Executors, and Administrators, the said bargain'd Premises unto the said [Daniel Dunn] his Executors, Administrators, and Assigns, against all Personss shall and will warrant, and for ever defend, by these Presents; * Provided nevertheless, that if I the said [John Nokes] my Executors, Administrators, or Assigns, or any of us, do and shall well and truly pay, or cause to be paid unto the said [Daniel Dunn] his Executors, Administrators, or Assigns, the Sum of [*fifty-one Pounds ten Shillings, as Principal and Interest, lawful Money of Great Britain, on the first of November next ensuing the Date hereof*] for Redemption of the bargained Premises; then this present Bill of Sale shall be void, and of none Effect: But if Default be made in the Payment of the said [*fifty-one Pounds ten Shillings*] in Part, or in the Whole, contrary to the Manner and Form aforesaid; that then it shall remain and be in full Force and Virtue. In Witness whereof, I have hereunto set my Hand and Seal the [*first Day of May,*] in the Year of our Lord [1774.]

Sealed and delivered, &c.

John Nokes, (L.S.)

A general Release.

K NOW all Men by these Presents, That I [Henry Hart, of London, Founder] have remised, released, and for ever quitted Claim, and by these Presents do for me, my Heirs, Executors, and Administrators, remise, release, and for ever quit Claim, unto [David Jones, Citizen and Loriner of London,] his Heirs, Executors, and Administrators, all and all Manner of Actions, Cause and Causes

* If the bargained Premises be redeemable, by a limited Time, a Proviso of this Nature is added,

of Actions, Suits, Bills, Bonds, Writings obligatory, Debts, Dues, Duties, Accompts, Sum and Sums of Money, Judgments, Executions, Extents, Quarrels, Controversies, Trespases, Damages, and Demands whatsoever, both in Law and Equity, or otherwise howsoever, which against the said [David Jones] I ever had, now have, and which I, my Heirs, Executors, and Administrators, shall or may have, claim, challenge, or demand, for or by Reason or Means of any Matter, Cause, or Thing, from the Beginning of the World to the Day of the Date of these Presents. In Witness whereof, I have hereunto set my Hand and Seal, [the Tenth Day of July,] and in the Year of our Lord, [1774.]

Signed, sealed, and delivered, being first legally stamped, &c.

Henry Hart, (L.S.)

Forms of Receipts, Notes, and Bills, &c. necessary to be copied over often, as introductory to the Forming the Man of Business.

Various Forms of Acquittances, when an Apprentice or Servant receives Money for the Use of his Master, or Employer, &c.

Received the 27th of September, 1774, of Mr. Adam Brown, Nine Pounds, twelve Shillings, for my Master Daniel Cole, on Account,

£. 9 12 —

Per Timothy Taylor.

Received the 3d of October, 1774, of Charles Duncomb, Forty-five Pounds, eight Shillings, six Pence, in full for my Master Edward Ford,

£. 45 8 06

Per George Hunt.

Received the 23d of October, 1774, of Mr. James Todd and Company, One hundred Pounds, for Mr. Jonathan Harvey and Partners,

£. 100 — —

Per Richard Smith.

Received the 16th of May, 1774, of the Honourable the United East-India Company, Two thousand Pounds, ten Shillings, for Mr. Durham and Company,

£. 2000 10 —

Per Thomas Turner.

Received

Received the 13th of *March*, 1774, of the Governor and Company of the Bank of *England*, Seven thousand forty-one Pounds, eleven Shillings, for Mr. *William Cox* and Company.

£. 7041 11 -

Per *Richard Young*.

Received the 25th of *March*, 1774, of the Worshipful Company of *Mercers*, Ninety-two Pounds, for my Father *Edward Yates*,

Per *Samuel Yates*.

£ 92 - -

Received the 31st of *May*, 1764, of the Right Honourable Sir *John Thompson*, Knt. Thirty Pounds, for the Use of the Artillery Company, *London*,

£. 30 - -

Per *John Blackwell*, Clerk.

Received the 13th of *August*, 1774, of Mr. *Edward Fox*, Ten Pounds, for a Quarter's Rent due at *Michaelmas* last, for my Master *George Jennings*,

£. 10 - -

Per *Christopher Jones*.

Received the 18th of *February*, 1774, of Mr. *Lewis Roberts*, Twenty-nine Pounds, six Shillings, in Part of a Bill of Ninety Pounds, payable to Mr. *Simon Williams*, or Order, due the 3d Instant,

Per *Philip Norton*.

£. 29 06 -

Received of Mr. *Andrew Cross*, by Order and on Account of Mr. *Humphry Hains*, One hundred Pounds, for Mr. *Samuel Graham* and Company, this 25th of *November*, 1774.

£. 100 - -

Per *Thomas Pugh*.

Received the 25th of *Dec.* 1774, of Mr. *Benjamin Lawrence*, by Order of Mr. *Nicholas Frith*, the Sum of One hundred Pounds, six Shillings, and eight Pence, on Account of Mr. *Thomas Combs* of *Chelmsford*: I say received for my Master *Nathaniel Dove* and Partner,

£. 100 06 8

Per *Isaac Day*.

Received of Capt. *Thomas Carter*, and Proprietors in the Engine for raising Water by Fire, Four hundred forty-eight Pounds,

88 *The YOUNG MAN'S Companion.*

Pounds, for three Tons of Copper, at 16 *d.* a Pound, for Mr. *Thomas Bentley* and Company, this 24th of *April*, 1774,

£. 448 — —

Per *Isaac Taylor*.

Various Forms of Acquittances, upon Receipt of Money, by Masters and Men of Business themselves.

R Eceived this 6th of *April*, 1774, of Messrs. *Samuel* and *Simon Stewarts*, Five hundred and forty Pounds on Account,

£. 540 — —

Per *William Dorman*.

Received the 16th of *May*, 1774, of the Right Honourable *William Parrot*, Esq; the Sum of Two hundred and fifty Pounds, in full of all Demands, for Self and Company.

£. 250 — —

Per *Henry Horton*.

Received the 27th of *November*, 1774, of Mr. *Matthew Powel*, the Sum of Ten Pounds, ten Shillings, in Part of my growing Salary and Subsistence,

£. 10 10 —

Per *Luke Clark*.

Received the 12th of *January*, 1774, of Mr. *Charles Took*, Twenty-five Pounds, in full for the Difference of Two thousand five hundred Pounds, Bank Stock,

£. 25 — —

Per *Jacob Law*.

Received the 17th of *May*, 1774, of Mr. *James Sharw*, Thirty Pounds, in full for six Months Interest of twelve hundred Pounds, due at *Lady-day* last,

£. 30 — —

Per *John Lower*.

Received the 19th of *July*, 1774, by the Order and for the Use of Mr. *Henry Mount*, of Mr. *Stephen Carr*, Eight Pounds, ten Shillings, and allow'd for Taxes and Repairs One Pound ten, together the Sum of ten Pounds, in full for a Quarter's Rent due at *Michaelmas* last,

£. 10 — —

Per *Joseph Shelley*.

Received the 17th of *May*, 1774, of Mr. *Mark Hawkins*, Twenty-five Pounds, in full for half a Year's Rent due at *Christmas* last, out of which, deducted for Taxes, Five

Pounds

Pounds; and for Repairs two Pounds; I say received for
and by Order of *Robert Carey, Esq;*

£. 25 — —

Per *Caleb Morris.*

Received the 14th of *April, 1774*, by the Hands of Mr.
Peter Clarke, by Order of *Christopher Lee, Esq;* Thirteen
Pounds seven Shillings, allow'd for Taxes Thirty-three Shil-
lings, in all fifteen Pounds, being for half a Year's Rent due
at *Lady-day* last, from Capt. *Abraham Surry,*

£. 15 — —

Per *Job Hill.*

Received the 16th of *April, 1774*, of the Executors of
Gregory, late Earl of *Hertford*, 'by' the Hand of Mr. *Isaac*
Cotton, the Sum of Seventy-five Pounds, in full for my half
Year's Annuity due at *Lady day* last,

£. 75 — —

Per *Charles Hurst.*

Received the 8th of *May, 1774*, of the Right Reverend
Richard, Lord Bishop of *Durham*, by the Hands of Mr.
Michael Mason, the Sum of Ninety Pounds, in full for three
Quarterly Payments of my Annuity due at *Michalmas*,
Christmas, and *Lady-day* last,

£. 90 — —

Per *William Crisp.*

Received the 1st of *May, 1774*, of *Robert Rogers, Esq;*
and the other Owners of the Ship the *Prince Frederick*, the
Sum of Seventy-three Pounds ten Shillings, in full for Cord-
age, Tackle, and Trimming, furnished the said Ship,

£. 73 10 —

Per *Abraham Withers.*

Promissory Notes by Bankers Apprentices and Servants.

London, March 7th, 1774.

PROMISE to pay the Honourable *Charles Congreve, Esq;*
or Bearer, on Demand, Fifty Pounds,

For Sir *Richard Davis* and Partners,

£. 50 — —

Per *Charles Stokes.*

London, October 5th, 1774.

I promise to pay to the Honourable Directors of the Uni-
ted *English* Company trading to *East-India*, or Bearer, on
Demand, Four hundred Pounds,

For my Father *Isaac Tuckey.*

£. 400 — —

Per *Thomas Dutton.*

London,

90 *The YOUNG MAN's Companion.*

London, November 9th, 1774.

I promise to pay to the Royal *African* Company, or Bearer, on Demand, Three thousand six hundred and forty-four Pounds, thirteen Shillings and six Pence, for my Masters *Jennings and Williams*.

£. 3044 13 06

Per *Adam Price*.

Promissory Notes for a Man's Self.

I PROMISE to pay to Mr. *Nathaniel Carter*, or Bearer, on Demand, Seven hundred Pounds, *May 17th, 1774*,

£. 700 — —

Per *Luke Heath*.

I promise to pay to the Governor and Company of the Bank of *England*, on Demand, Nine thousand Pounds, Value received this 4th of *May, 1774*, for Self and Partners,

£. 9000 — —

Per *Francis Gyles*.

London, August 2d, 1774.

I promise to pay Mr. *Edward Draper*, Cashier of His Majesty's Revenue of Excise, or Order, forty Days after Date, Four hundred and thirty Pounds, Value received,

£. 430 — —

Per *Christopher Wade*.

I promise to pay to *Paul Parker, Esq;* or Order, on Demand, Three hundred and ninety-four Pounds, two Shillings, and six Pence, Value received this 16th of *April, 1774*,

£. 394 02 06

Per *Philip Wenham*.

I promise to pay to Sir *Solomon Haines*, or Order, the Sum of Thirty Pounds in Manner following; ten Pounds, Part thereof, two Months after Date, ten Pounds more the 17th of *March* next, and the remaining ten Pounds the 24th of *June, 1775*, Value received: Witness my Hand, at *London* the 27th of *May, 1774*,

£. 30 — —

Per *Moses Spike*.

I promise to pay to Capt. *Alexander Moor*, or Order, on Demand, eighteen Pounds, eight Shillings, and nine Pence, furnished by my Order to Lieutenant *Charles Cornwall*, appears by his Receipts delivered this 24th of *May, 1774* to me,

£. 18 08 09

Per *Hugh Harold*.

London

The YOUNG MAN's Companion. 91

London, June 5, 1774.

I promise to furnish Mr. Gregory Fitz-Harding, on Demand, with Bills of Exchange to the Value of Five thousand Pounds *Sterling*, at the Price current, payable to himself, or Order, in *Messina*, the next ensuing Fair, Value of Sir John Scot received,

£. 5000 — —

Per *Edward Lloyd*.

I promise to pay to George Grove, Esq; or Order, the Sum of Fifty Pounds on Demand, after Receipt of a Bill of Exchange drawn the 20th current, by *Humphry Hughes* on *Henry Palmer* of *Southampton*, Maltster, for the like Sum, payable to *William Pierce*, Esq; or Order, which the said George Grove has indorsed to me this 28th of *January*, 1774,

£. 50 — —

Per *Abraham Wingfield*.

I promise to return to her Grace the Dutchess Dowager of *Tredegar*, or Order, on Demand, one Casket of Jewels, seal'd, one hundred of Gold Plate, three hundred and fifty of ditto Silver, seventy Caracts of Oriental Pearl, and a thousand Pound Bank Note, received of her Grace, this 4th of *June*, 1774, for Self and Company, *Timothy Ward*.

A Promissory Note, mentioning Order, as indorsable from one Person to another, which is done by the present Possessor's writing his Name on the Back of it, and delivering up to the Party, to whom he intends to assign over his property therein.

It is unnecessary to have a Promissory Note, payable to bearer, indorsed, if you are satisfied the Note is good.

The delivering up a Promissory Note to the Person who signed it is a sufficient Voucher of its being paid; nor is there any Need of writing a Receipt thereon.

Promissory Notes, and Book Debts, if not legally demanded in the Space of six Years, cannot be recovered by Law, upon the Debtor's pleading the Statute.

If you keep a Promissory Note upon Demand in your own Hands above three Days, and the Person it is upon should fail, the Loss will be your own; but if he fail within three Days, it will light in Equity on the Person that did it you.

N. B. Observe in Promissory Notes, that the Value received is mentioned; or they are of no Force.

B I L L S

BILLS of PARCELS.

*A Linendraper's Bill.*The Honourable the Lady *Molesworth*,

1774,

Bought of *Simon Eaton and Partners*,*March 14,*

	s.	d.	l.	s.	d.
16 Ells of Dowlas—at 1 4 per Ell	1	4	1	1	4
22½ Ells of Holland at 3 4	3	4	3	15	—
1 Piece of Cambrick	—	—	3	4	6
A Piece of Muslin	—	—	2	17	3
85½ Ells of Diaper at 1 10	1	10	7	16	9
19½ Ells of Damask at 4 3	4	3	4	2	10½

£. 22 17 8½

*An Hofsier's Bill.**Mrs. Anne Pitt,*

1774,

Bought of *Isaac Webb*,*April 10,*

	s.	d.
15 Pair of Womens worsted mixt at 5 7 per Pair	5	7
23 Ditto of Mens Silk at 17 4	17	4
22 Ditto of Mens Yarn at 3 2	3	2
18 Ditto of <i>Norwich</i> Hose at 4 9	4	9
38 Ditto of Thread at 3 4	3	4
13 Ditto of Thread at 4 7	4	7

*A Millener's Bill.**Madam Johnson,*

1774,

Bought of *Mary Hale*,*April 13,*

	s.	d.	l.	s.	d.
15½ Yds. of flower'd Ribband at 2 3	2	3	1	12	1
3 Pair of <i>Roman</i> Gloves at 9 4 per Pair	9	4	1	8	—
6 Dozen of <i>Irish</i> Lamb ditto at 1 3	1	3	4	10	—
7 Sarcenet Hoods, white at 4 6	4	6	1	10	—
16 Fans, <i>French</i> Paper Mount at 3 3	3	3	2	12	—
APce. of <i>Mechlin</i> Lace, 16 Yds. at 13 10 per Yd.	13	10	11	1	—

£. 22 13 11

A China Man's Bill.

The Right Honourable the Lady Knight,

Bought of Mary Tombs,

1774,

February 3,

l. s. d.

36 China Plates — at 0 3 8 each

18 Dishes ditto — at 0 10 6 —

2½ Pair of Jars and a Pair } — — — 13 10 6
of Beakers allowed at }

A Tea Table Set compleat, at — — — 3 18 4

Indian sprig'd Muslin 1 Ps. } — — —
qt. 14¾ Yards, at — } 0 9 —

Fine Chints 10 Pieces — at 3 3 per Piece.

A Fruiterer's Bill.

Mrs. Ruth Cole,

1774, April 3,

Bought of Samuel Lemon,

7 Dozen of Malaga Lemons at 2 3 per Dozen

8½ Hundred of Lisbon do — at 7 2 per Hundred

9 Ropes of Spanish Onions — at 1 6 per Rope

1 Buhel of do Chestnuts — at — — — 7 10

43 Dozen of best China and } — — —
Sevil Oranges at — } 1 2 per Dozen

12 Pomegranates — — — 4½ each

A Fishmonger's Bill.

Mr. Charles Croxall,

1774,

Bought of Robert George,

March 17,

l. s. d.

100 Hundred of Haberdine at 7 10 5 per C.

100 Hundred of Ling — at — — — 8 12 6

100 Hundred of Stockfish — at 4 10 6 per C.

100 Caggs of Sturgeon — at 0 16 10 per Cagg

100 Barrels of Herrings — at 3 10 1 per Bar.

100 Dried Salmon — at — 1 2 each

A Druggist's Bill.

James Smith, Esq;

Bought of William Robinson, Feb. 10, 1774,

s. d.

7½ of Smyrna Coffee — at 5 8 per lb.

3 Pounds of Mocha do — at 5 4 —

6½ Do Imperial Tea — at 25 0 —

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10 $\frac{1}{4}$ lb. of the best Bohea —	at	14	6	—
13 Do of Royal Green Tea —	at	18	8	—
21 Do of Sug. double refined	at	1	— $\frac{1}{2}$	—

A Salter's Bill.

Mrs. Lane,

1774,

November 5,

Bought of Mark Norton and Partner,

		s.	d.	
13 Pounds of Anchovies —	at	1	4 $\frac{1}{2}$	per Pound
30 Do of Capers — —	at	—	10 $\frac{1}{4}$	—
12 $\frac{3}{4}$ Ditto of Salt-Petre —	at	1	2 $\frac{1}{2}$	—
2 $\frac{1}{3}$ Gallons of pickled Mush-rooms —	} at	3	7	per Quart
4 $\frac{1}{8}$ Gallons of Lucca Oil —	at	12	—	per Gallon
A Westphalia Ham, wt 20 lb.	at	—	11 $\frac{1}{2}$	per Pound

A Pewterer's and Brazier's Bill.

Mr. Edward Rawlinson,

1774,

October 20,

Bought of George Harbin,

		l.	s.	d.	
Hard Metal Plates 3 dozen, wt. 50 lb.	at	0	1	4	prPound
8 Dishes do, a Monteth, and Cul-ender, wt. 40 lb. —	} at	0	1	6	Ditto
A Copper with a discharging Cock, wt. 66 $\frac{1}{2}$ — —					
	} at	0	1	4 $\frac{1}{2}$	Do
Iron Work to do, and a Crane, wt. 97					
A Stove-Grate, with Shovel, Tongs, Poker, and Fender —	} at			1	18 6
A large brass Pot and Saucepan wt. 38					
	at	0	1	7	prPound

A Furrier's Bill.

Mr. Luke Frith,

1774,

May 5,

Bought of Francis Howard,

		s.	d.	
Coney Skins 1300 —	at	13	6	per Hundred
Beaver do 180 lb. —	at	7	8	per Pound
A Sable Muff and Tippet —	allowed at	2	1	—
Fitch Skins 90 —	at	—	3 $\frac{1}{2}$	per Skin
Otter Skins 50 —	at	3	—	—
Hare Skins 140 —	at	9	6	per Hundred

A Leatherfeller's Bill.

Mr. Edmund Nash,

Bought of Adam Leigh,

1774,									
November 16,									
Large oil'd Lamb Skins	215	at	1	3½	per	Skin			
Goat Skins	130	at	—	11¼	D°				
Woolom'd Sheep Skins	137	at	1	3	D°				
Calves Skins	19	at	4	3	D°				
Wild Buck	15	at	12	9	D°				
Buffa Hides	82	at	12	6	D°				

A Cheesemonger's Bill.

Capt. Obadiah Parsons,

Bought of Thomas Wilson,

1774,									
December 12,									
2 Old Cheshire Cheeses	5	2	27	at	1	17	4	per	C.
5 Gloucestershire Cheeses	4	3	10	at	1	12	6		
3 Tedder Cheeses	2	3	25	at	2	16	10		
8 Flitches of Bacon, wt.	49	Stone	at	0	3	4	pr	Stone	
2 Firkins of Butter			at	1	10	0	each		
100 lb Butter	12	Ways	at	8	3	8	pr	Wey	

A Grocer's Bill.

Mr. William Marriot,

Bought of George Davis and Company,

1774,									
March 12,									
Gar 2 Hhds. nt.	17	2	17	at	1	3	10	p.	C.
Oil 3 Barrels	12	1	19	at	1	14	5		
Tobacco 1 Hhd.	4	0	12	at	4	19	4		
Ice 1 Barrel	—	1	1	5	at	2	16	4	
Pepper 1 Bag	—	1	3	19	at	3	12	4	
Limstone	—	2	1	19	at	1	19	1	
Wax 3 Cakes	2	2	12	at	1	18	4		

£. 83 2 2

A Mercer's Bill.

Ms. Jane Somerset,

Bought of Edmund Birch and Oswald Oakley,

3 Yards of rich brocaded	}	at	11	6	pr	Yard	11	15	10½
Sattin									
Yards of Mohair		at	4	2			4	5	—

25

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25 $\frac{1}{2}$	D° of Paduasoy	at 11	8	14	14	7
15 $\frac{1}{2}$	D° of flower'd Damask	at 8	8	6	14	4
34 $\frac{1}{4}$	D° of Poplin	at 3	0	8	2	9
12 $\frac{1}{2}$	D° of Italian Mantua	at 7	2	4	9	7
30	D° of double Taffaty	at 2	9	4	2	6

£. 48 4

When the Money is paid down, either of the Partners may write,

Received the Contents in full of all Demands, for Self and Partner,
per Oswald Oakley.

A Woollen Draper's Bill.

Mr. Charles Tomlins,

Bought of Sir William Ashhurst and Company,

Feb. 8, 1774,

		s.	d.	l.	s.	d.
10 $\frac{1}{2}$	Yards of Yorkshire Cloth	at 6	6	per Yard	3	8
7	D° of fine Spanish Black	at 16	3		5	13
6 $\frac{1}{4}$	D° of fine grey Cloth	at 15	9		5	6
16 $\frac{1}{4}$	D° of Frize	at 3	6		2	18
4	D° of fine Drab	at 15	6		3	2
5 $\frac{7}{8}$	Ditto of superfine Spanish Cloth	} at 18	6	5	8	
31	Yards of Livery Scarlet Cloth					
		} at 13	0	20	3	0

£. 46 —

Received the full Contents, for Sir Wm. Ashhurst and Company,
per Michael Medcalf.

B I L L S on BOOK-DEBTS.

An Upholsterer's Bill.

The Right Honourable the Lord Bolton,
bought of Paul Fellows,

1774,

April 19,

A rich Crimson Damask Bed laced compleat

May 4, A set of Window Curtains and Vallance d°

— 7, A fine Carpet, Counterpane and an

Otter Down Quilt

l. s.

75 0

16 11

12 0

June

The YOUNG MAN's Companion. 97.

		l.	s.	d.
June 6,	A Crimson Velvet Easy Chair, and 2 } Stools D ^o —	13	7	6
— 13,	A wrought Bed, Dimity, and Furni- } ture compleat —	28	18	4
Aug. 10,	A down Bed, Bolster, Pillows, with } a Mattress and Quilt	15	0	0
— 16,	Chairs 10, with two arm'd D ^o , } Walnut-tree fram'd —	34	12	6
Sum £.		196	0	0

If a Servant receives the Bill, let the Receipt run thus,
Received the 30th of December, 1774. of the Right Ho-
nourable the Lord Bolton, by the Hands of Mr. Simon Steward,
the full Contents, for my Master Paul Fellows,
Per A. Glover.

A Goldsmith's Bill.

The Right Honourable Sir Michael Newton, Knight
of the Bath,

1774, Bought of John Nichols,

		oz.	dwts.	gr.	s.	d.
May 31,	For a Silver Set of Castors —	25	10	10	at 7	9
July 7,	Half a Dozen of Soup } Plates —	85	14	15	at 6	6
— 10,	A Silver Tea pot and } Lamp	29	16	15	at 6	4
Aug. 9,	A large Punch Bowl	67	—	16	at 6	9
— 11,	A Dozen desert Knives, } Forks, and Spoons, with } a Shagreen Case					20
Nov. 6,	A Doz. Silver Spoons	33	11	10	at 6	2

A Cabinet-Maker's Bill.

Her Grace the Dutchess of Newcastle,

Bought of Caleb Loudham,

		l.	s.	d.
1774,				
Feber 2,	Chimney Glafs, and a Pair of Sconces —	5	18	—
— 8.	A Pair of Pier Glasses, 72 Inches, in } gilt Frames —	30	—	—
June	F			08. 10,

98 *The YOUNG MAN's Companion.*

<i>Oct.</i> 10, A Pair of India Cabinets 43 l. 10 s. each	} 87 —	l. s. d.
— 20, A fine Indian four-leav'd Screen, and a Fire Screen	} 17 10 —	
<i>Nov.</i> 18, A Book Case with Glass Doors, and a Corner Cupboard, d ^o	} 21 —	
— 30, A Walnut-tree Table, and a Set of Dressing Boxes japan'd	} 3 4 10	
<i>Dec.</i> 7, A Tea Table and Stand plated, wt. 103 oz. at 8 s. 4 d. per Ounce	} 42 18 4	
— 30, A Dozen and a Half of fine matted Chairs at 8 s. 6 d. each	} 5 2 —	

£. 212 13 2

Received the 28th of December, 1774, of her Grace the Dutchess of Newcastle, Fifty Pounds in Part of this Bill, for Mr. Caleb Loudham,

Per Israel Ruffel.

A Factor's Bill.

Messrs. *Somerſet and Droſer*, Bought of *Joſhua Cox*, and Company,

1774, <i>September</i> 3.	s. d.	l. s. d.
For Serge de Nismes 13 } Ps. each 30 Yards	at 3 10½ per Yard	75 11 3
<i>Sept.</i> 7, Silk Drugget 24 } each 28½ Yards	at 5 10 d ^o	199 10 0
<i>Oct.</i> 2. Grogams 30 each 41	at 2 8 d ^o	164 —
— 19, Silk Camblets 11 } each 40 Yards	at 3 17½ d ^o	69 —
<i>Nov.</i> 6, Duroys 40 — —	at 32 0 per Piece	64 —
— Anterines 10 each 26½	at 32 0 per Yard	28 14 —
<i>Dec.</i> 10, Sagathies 23 } each 30 Yards	at 1 4 d ^o	46 —

£. 646 15 8

A Lighterman's Bill.

Sir *Basil Brown*, Dr.

To *Moses Clarkson*,

1774,

l. s. d.

June 12,

l. s. d.

Coals in the Pool 40 Chaldrons at 1 4 6 per Ch.

49 —

Metag

The YOUNG MAN'S Companion. 99

		<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>
Wetage of 42 Chaldrons	- at	0	0	8	—	1	8	0
Lighterage of d ^o	- - at	0	0	10	—	1	15	0
Wharfage of d ^o	- - - at	0	0	2	—	0	7	0
Cartage of said 40 Chaldrons	at	0	2	6	—	5	—	—
						£. 57	10	0

N. B. *One and twenty Chaldron are a Score of Sea-Coal.*

A Wine Cooper's Bill.

Mr. Isaac Hall,

Bought of *William Morton*,

			s.	d.
1774,				
Mar. 28,	Palm Sack 18 Gallons	at 10	6	per Gall.
Apr. 13,	Port Red 35 d ^o - -	at 5	4	_____
May 26,	Sherry 17 d ^o - -	at 6	6	_____
—31,	Rhenish 19 d ^o - -	at 6	8	_____
Aug. 13,	White Lisbon 32 d ^o -	at 4	10	_____
—20,	A Chest of Florence	agreed for	_____	4

A Bricklayer's Bill.

Edward Cornwall, Dr.

To *Timothy Bright*, for Work and Materials in his House
on *Tower-hill, London.*

		s.	d.		l.	s.	d.
Ar. 28,	Bricks 25 Thousand at	15	7 pr M.	19	9	7	
— 30,	Tiles 11 d° - - at	19	5 ———	10	13	7	
Pr. 1,	Lime 28 Hundred - at	15	11 per H.	22	5	8	
— 12,	Sand 19 Load - - at	3	11 per L.	3	14	5	
Day 24,	Ridge Tiles 149 - at	8	1 per H.	0	12	0 ^r / _z	
Mt. 28,	Work for myself } at	3	0 per D.	11	5	0	
	90 Days - }						
—	D° for Labourer 90 at	1	8 ———	7	10	0	
—	D° for my Man 90 at	2	6 ———	11	5	0	
				£. 89 0 3 ^r / _z			

Note. A Brick ought to be 9 Inches long, $4\frac{1}{2}$ broad, and thick. 500 Bricks are a Load, a thousand Tiles the like, Bushels are a Hundred of Lime; about 3000 Bricks will make a Rod of Brick-work, viz. $272\frac{1}{2}$ square Feet, a Brick and a half thick.

100 The YOUNG MAN's Companion.

The Right Honourable Charles Lord Bruce, Dr.

For Bricklayers Work at *Savernacle, Wilts*, performed
by *Philip West*.

		<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>
Brick-Work 50 Rods 68	}	at 5	10	0	pr Rod	276	7	5½
Feet Statute Measure								
Tiling plain 15 Square	}	at 2	4	0	pr Squ.	33	17	2
39 Feet - - - -								
Rubb'd Return 250 Feet		at 0	3	0	pr Foot	37	10	-
Straight Arch 72 - - -		at 0	2	0		7	4	0
Jack Arch 36 - - -		at 0	2	0		3	12	0
Paving with 10 Inch	}	at 0	0	3½		25	15	11½
Tiles, 1769 Feet								
Measured July 22, 1774,								
Per William Stock,						£. 384	6	7

A Builder's Bill.

The Right Honourable Richard Earl of Castlemain, Dr.

To Nathaniel Taylor, for Work and Materials in his
House in *Henley Park, Surry*.

		<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>
1774, March 27, Oaken Timber	}	at 2	5	0	a Ton	33	15	0
12 Load -								
— 30, Fir Timber 35	}	at 0	12	10	a Load	17	19	4
Ton - - -								
April 5, Oaken Plank	}	at 0	0	3½	pr Foot	1	8	0
96 Feet -								
— 16, Norway Deals 590		at 6	15	0	pr H.	33	3	9
— Sixpenny Nails	}	at 0	3	10	pr M.	5	11	2
29 Thousand								
May 5, Ten Groat Nails 300		at 0	14	10	D° -	2	4	6
June 28, Work for myself	}	at 0	3	4	pr Day	15	0	0
90 Days								
— D° for 3 Men 90		at 0	2	6	each	33	15	0
— Wainscot 73 Yards	}	at 0	3	2	pr Yd.	11	13	7
7 Feet - - -								
— Double Quarter 58	}	at 0	0	4	pr Foot	0	19	4
Feet - - -								
						£. 155	9	4

Note, Deals and Nails are 120 to the Hundred; 50 Feet
are a Load, and 40 Feet a Ton of Timber.

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The YOUNG MAN's Companion. 101

A Corn-Chandler's Bill.

The Reverend Mr. Edward Collins,
Bought of John Pearson and Partners,

1774,			s.	d.	
Mar. 27,	Oats	- 5 Qrs.	- at 2	3	per Bushel
April 9,	Beans	- 9 Bush.	- at 4	10	_____
May 16,	Bran	- 7 Qrs.	- at 1	10	_____
June 19,	Tares	- 19 Bush.	- at 1	11	_____
— 24,	Pease	- 16 D ^o	- at 3	11½	_____
July 2,	Pale-Malt	28 D ^o	- at 3	2	_____

A Dyer's Bill.

Mr. Drake,

Bought of Edward Eaton, Packer,

			Ps.	s.	d.	
May 7,	Exeter Stuffs,	yellow	73	at 14	0	pr Piece
— 13,	Norwich d ^o	blue	- 30	at 11	6	_____
— 20,	Tamies black	-	- 42	at 12	8	_____
July 1,	Colchester Bays	green	28	at 9	0	_____
— 28,	Camblets orange	-	- 21	at 15	0	_____

An Upholder's Bill.

Mr. Rowland Lee,

Bought of William Ward and Company,

			l.	s.	d.	
Aug. 7,	For Superfine	¼ Blankets	17	Pr. at 1	3	9 pr Pr.
— 9,	Medium d ^o	- - -	- 13	— at 0	13	6 D ^o
—	Harrateen blue	- - -	- 31	Ps. at 0	2	8 pr Ps.
Nov. 6,	Cheney d ^o	- - -	- 20	— at 1	18	0 D ^o
— 18,	Green Linseys	- - -	- 10	— at 1	8	0 D ^o
Dec. 9,	15 printed Callico	Quilts ¾	— at 0	16	0	each

A Silkman's Bill.

Mrs. Ann Finch,

Bought of Samuel Palmer and Partner,

1774,			lb.	s.	d.	
July 30,	or Tripoli Belladine Silk	-	44	at 19	8	per lb.
Aug. 10,	Legee of Smyrna	-	12½	at 16	7	D ^o
— 14,	A Fangot of raw Silk	130	at 13	8	D ^o	
Sept. 15,	D ^o of Ardas	- -	- 118	at 12	4	D ^o
— 30,	Gold and Silver Twist	17	at 6	4	per Oz.	
—	Twisted Silk in Grain	12¼	at 3	0	D ^o	

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An Ironmonger's Bill.

Mr. Charles Richardson,

1774,

Bought of Joseph Lewis,

June 10,

s. d.

For Spring Door-Locks with Hinges	19	at	4	3	each
June 19, Bolts 42 Pounds	-	-	at	0	9 per lb.
Aug. 1, Birmingham Brass Locks	30	at	7	6	each
— 13, A Cast Iron Back wt.	1 3 10	at	14	8	per H.
Sept. 10, Sheffield Nails wt.	- 2 1 12	at	0	4 $\frac{5}{8}$	per lb.
— 15, Plate Iron wt.	- - 5 3 0	at	0	6 $\frac{1}{4}$	D ^o

A Druggist's Bill.

Messrs. Obadiah and Joseph Oram,

1774,

Bought of Thomas Mount and William Eaton,

Oct. 13.

C: lb.

l. s. d.

For Galis wt.	1 $\frac{1}{2}$ Gr.	12 Tr.	lb.	at	0	0	9 $\frac{1}{2}$	per lb.
Oct. 27, Mestica Cochineal	18 $\frac{1}{2}$	at	1	12	7	D ^o		
Nov. 16, Scammony	- - 37 $\frac{1}{2}$	at	0	10	0	D ^o		
— 20, Gun n Arabic	- - 127	at	0	0	8 $\frac{1}{2}$	D ^o		
Dec. 1, Sassafras	3 $\frac{1}{2}$ Hundreds	at	0	0	4	D ^o		
— 31, Opium	10 $\frac{1}{2}$ Pounds	at	0	0	6	D ^o		
Jan. 11, Tea 1 Canister	75 lb.	at	0	13	8	D ^o		

A Tobacconist's Bill.

Mr. Humphrey Hughes,

Bought of Thomas Stubbs,

1774,

s. d.

March 27, For 1 Hhd of best } bright Tobacco qt. nt. 5 C. $\frac{1}{2}$ }	at	0	10 $\frac{1}{8}$	per lb.
April 15, 1 Box of Oronooko } qt. nt. 75 lb. $\frac{1}{2}$ - - - }	at	0	11 $\frac{1}{2}$	—
— 19, 5 Bags of old Spanish } qt. nt. 684 lb - - - }	at	0	4 $\frac{1}{8}$	—
May 25, $\frac{1}{2}$ Hhd. qt Gr. 335 } Tr. 42 is nt. 293 lb. - - }	at	0	5 $\frac{3}{8}$	—
— 27, 2 Rolls qt. nt. 94 -	at	1	5 $\frac{1}{8}$	—

BILL

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BILLS of PARCELS, used by Merchants, and Wholesale Dealers.

Mr. Samuel Robinson, London, May 4, 1774.
Bought of William Stapleton, 6 Bales of French Cloth, to pay
at 6 Months, as follows, viz.

				l.	s.	d.		l.	s.	d.
N ^o 4	qt. 3	Ps. Dowlas - at	3	6	0	per Ps.	9	18	0	
7	4	Ps. D ^o - - at	4	10	0	d ^o	18	0	0	
8	3	Ps. D ^o - - at	4	15	0	d ^o	14	5	0	
14	3	Ps. Lockrams at	2	15	0	d ^o	8	6	6	
17	3	Ps. D ^o - - at	2	18	0	d ^a	8	14	0	
20	4	Ps. D ^o - - at	2	7	6	d ^o	9	10	0	
20 Ps. in all amounting to - -							<u>£. 68 13 0</u>			

William Cobb, Esq. October 21, 1774.
Bought of James Jones and Partner, 8 Bags of Farnham
Hops for ready Money.

	C.	q.	lb.	
N ^o 1	2	2	18	
2	2	3	10	
3	2	2	17	
4	2	1	—	
5	3	—	8	
6	3	1	3	
7	3	—	20	
8	2	2	7	
C. 22 1 27 at 11d. per Pound				<u>£. 115 9 1</u>

Mr. Daniel Wright, London, Jan 7, 1774.
Bought of Philip Pague, 6 Casks of Barbadoes Sugar, at
1 Month, viz.

	C.	q.	lb.	q.	lb.
N ^o 81	—	wt. —	8 3 25	Tare	3 7 each
82	—	—	8 2 21		8 multiply
83	—	—	8 — 12		
84	—	—	8 1 16	C. 6	2 —
85	—	—	7 2 20		
86	—	—	8 — 16		
Gross			49 3 24		
Tare			6 2 —		
Nett			43 1 24 at 47 6 per C.	<u>£. 103 4 6½</u>	
			F 4	Mr.	

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Mr. Richard Smith,

Bought of Anne Smart and Company, September 13, 1774

5 Butts of Rape Oil, viz.

	C.	q.	lb.	q.	lb.
N ^o 43—wt.—	10	—	10	Tare	2 13
48 ———	11	2	18	———	2 13
51 ———	10	1	—	———	2 13
57 ———	11	—	12	———	2 21
60 ———	12	3	18	———	2 9

Gross 56 — 2 C. 3 — 13

Tare 3 — 13 deduct *l. s.*

Nett 52 3 17 is 790 Gall. at 23 16 per Ton

£. 79 13 4

Note, The Tun of sweet Oil is 236 Gallons, and 7 lb. Nets Weight makes a Gallon of Oil.

Sir Andrew Gossling and Company,

Bought of the United East-India Company, at 4 Months

November 27, 1774,

Pepper, 2 Lots, viz.

	C.	q.	lb.	lb.
N ^o 17 — 10 Bags qt.	27	1	18	Tr. 150
20 — 10 d ^o - -	24	3	24	——— 138

Gr. 52 1 14 288 or

Tr. 2 2 10 2 2 10

Nett 49 3 4 at 10d. $\frac{1}{2}$ per lb. is

£. 241 - 10

Red-wood, 2 Lots, viz. Ton C.

N ^o 47 — 120 Sticks -	10	13 $\frac{3}{4}$
48 — 100 d ^o - -	11	12 <i>l. s.</i>

220 Sticks wt. 22 5 $\frac{3}{4}$ at 3 7 pr Ton £. 74 13

Wormseed, 3 B les, viz.

	C.	q.	lb.
N ^o 18 — wt —	3	1	10
24 ———	4	2	—
37 ———	2	3	19

Gr. 10 3 1

Tr. 1 — 15

Nt. C. 9 — 14 at 13d. $\frac{1}{2}$ pr lb. - - £. 60 12

£. 376 6 1

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Mr. Peter Davis and Company,

London, April 24, 1774,

Bought of Titus Tradewell, for ready Money, Cotton 14
Bags, viz.

	C.	q.	lb.
N ^o 1—qt.—	3	1	7
2 ———	2	3	—
3 ———	2	3	5
4 ———	3	—	15

11 3 27
12 1 1

24 1 — Total Grofs.

— 3 13 Tare allowed.

23 1 15 Suttle 2619 Pounds.

Tret 160 ———

Nett 2519 at 14^d pr lb. is,

£. 146 18 10

More, viz. C. q. lb.

N ^o 30 ———	2	3	12
31 ———	3	3	20
32 ———	3	1	26
33 ———	3	2	3
34 ———	2	2	7
35 ———	1	3	10

Damaged

17 1 12 Grofs

— 2 11 Tare

26 3 2 Suttle 1877 Pounds

Tret - 77

Nett 1800 at 4^d. pr lb. £30 — —

£. 176 18 10

Of ARITHMETIC.

HAVING thus given the Reader a View of the necessary Precedents, and different Forms of Business, which will be sufficient to convey a tolerable Idea of the Methods used in Trade, by Care and Attention, to a tolerable Notion and Method even before he is engaged in

real Practice, we shall next proceed to Arithmetic, the Knowledge of which is so necessary, that scarce any Thing in Life, and nothing in Trade can be done without it.

And first of *Notation and Numeration.*

In *Notation* we must observe, that all Numbers may be, and now generally are, expressed by, or composed of, the ten Characters following, *viz.*

One, Two, Three, Four, Five, Six, Seven, Eight, Nine, Cypher,

1 2 3 4 5 6 7 8 9 0

Nine of these are called significant Figures, to distinguish them from the Cypher; which of itself signifies Nothing; but as it is plac'd serves to increase the Value of the next Figure or Figures that stand before it; as 3 is but three; but before the Cypher thus, 30, the 3 becomes thirty, &c.

— We are to note, that every one, or any, of the above nine Figures or Digits, have two Values; — one certain, and another uncertain; the certain Value is, when it stands alone by itself; the uncertain is, when joined or plac'd with other Figures or Cyphers; for, when any one of these Figures stands alone, it signifies no more than its own simple Value; as 5 is but five, 4 but four, 6 but six, and 3 no more than three, &c. And this is the certain Value of a Figure; but, when another Figure or Cypher is annexed, they are then increased in their Value ten Times; as 5, or 5 Units, or Ones, to 5 Tens, or Fifty, 4 to 4 Tens, or Forty, 6 to 6 Tens, or Sixty, and 3 to 3 Tens, or Thirty; as thus, 51, Fifty-one, 42, Forty-two; 63, Sixty-three; 34, Thirty-four, &c. Again, if any of the said Figures stand in the third-Place towards the Left-Hand, they then signify so many Hundreds as singly they express Units or Ones; as 500 is Five hundreds, 400 Four hundreds, 600 Six hundreds, and 300 Three hundreds, &c. If any of them possess the 4th Place towards the Left-Hand, they are so many Thousands as they contain Units: And so any, or every Figure, increases by a Ten fold Proportion, from the Right Hand to the Left, according to the Place it is found or stands in; so that 5 may be but Five, or Fifty; Five hundred, or Five thousand. In the first Place, 5; in the second 50; in the third 500; and in the fourth Place, 5000, &c. This therefore is the uncertain Value of a Figure: But the true Value of Figures in Conjunction may be fully learnt and understood by the following Table.

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The Numeration Table.

C	X	Thouf. of Mill.	C of Millions	Tens of Mill.	Millions	C of Thouf.	Tens of Thouf.	Thousands	Hundreds	Tens	Units	Thousands of Millions	Millions	Thousands	Units or Ones
12	11	10	9	8	7	6	5	4	3	2	1				
1	2	3	4	5	6	7	8	9	0	1	2	123	456	789	012
	1	2	3	4	5	6	7	8	9	0	1	12	345	678	901
		1	2	3	4	5	6	7	8	9	0	1	234	567	890
			1	2	3	4	5	6	7	8	9		123	456	789
				1	2	3	4	5	6	7	8		12	345	678
					1	2	3	4	5	6	7		1	234	567
						1	2	3	4	5	6			123	456
							1	2	3	4	5			12	345
								1	2	3	4			1	234
									1	2	3				123
										1	2				12
											1				1

In order to read any Number with Ease and Facility, get the Words at the Head of the Table by Heart; as Units, Tens, Hundreds, Thousands, &c. and apply them thus, 75, five Units, Five, and 7 Tens, Seventy, that is, Seventy-five. Again, 678; 8 Units, Eight; 7 Tens, Seventy; and 6 Hundreds, six Hundred; that is, six hundred seventy-eight. Once more, 3456; 6 Units, six; 5 Tens, Fifty; 4 Hundreds, four Hundred; 3 Thousands, three Thousand; therefore the Sum together is, Three Thousand four hundred fifty-six. Read the 4th Line of the Table downwards, viz. 123456789; here the Valuation of the Figures is from the Right-Hand to the Left, as 1 in the ninth Place is Hundreds of Millions, but to be read from the Left-Hand to the Right; thus, One hundred twenty-three Millions, four hundred fifty six Thousand, seven hundred eighty-nine. But any Number may yet be read more intelligibly, viz. by Stops, thus; make a Comma after every third Figure or Cypher, beginning at the Right-Hand, and proceeding on towards the Left; distinguishing thereby every third Place into Hundreds, as Hundreds of Units, Hundreds

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Hundreds of Thousands, Hundreds of Millions, and Hundred thousands of Millions, &c. Let us, for Example, read the first Line of the Table; the last Place in Valuation is, Hundred thousands of Millions, and to be pointed into Divisions thus, 123.456,789 012; and read as follows, One hundred twenty-three thousand, four hundred fifty six Millions, seven hundred eighty-nine thousand, and twelve: that is, no hundreds, but twelve. Again, read the following Number, viz. 276,245,678,921,460; here the first Point or Period is betwixt 4 and 1, and the last between 2 and 6, and to be read thus; 276 Millions of Millions, 245 Thousands of Millions, 678 Millions, 921 Thousands, 460 Units or Ones. And thus may any Number be read with Ease, though a large one: And in this Manner large Numbers or Sums are expressed, or set out, in the Exchequer, Bank, and Lottery Tickets, &c. as thus, N^o 224,156,—19,478—and 420,000, &c. The foregoing *Table of Numeration* is on the Right-Hand divided into Periods, for the easier Reading thereof.

Numbers to be read or written.

96, *Ninety six*

242, *Two hundred forty-two*

7924, *Seven thousand nine hundred 24*

54006, *Fifty-four thousand and six*

524707, *Five hundred twenty-four thousand 707*

4506240, *Four Millions 606 thousand 240*

62700472, *Sixty two Millions 700 thousand 472*

474960204, *Four hundred 74 Millions 960 thousand 204*

4214007042, *Four thousand 214 Millions 7 thousand 42*

470706420042, *Four hundred and 70 thousand 706 Millions 420 thousand and 42*

Of Numerical Letters.

Sometimes Numbers are expressed by Letters; especially in the *Bible*, to signify the Chapter or Psalm; at the Bottoms of Title Pages of Books, for the Date of the Year, and frequently in Inscriptions on Funeral Monuments, &c. For which Reason it is necessary to know how to read them. Therefore observe, that I. stands for 1, or an Unit, II. for 2, III. for 3. IV. for 4. V. for 5. VI. for 6. VII. for 7. VIII. for 8. IX. for 9. X. for 10. XI. for 11. XII. for 12. XIII. for 13. XIV. for 14. XV. for 15. XVI. for 16. XVII.

XVII. for 17. XVIII. for 18. XIX. for 19. XX. for 20. XXI. for 21, &c. XXX. for 30. XXXI. for 31, &c. XL. for 40. XLV. for 45, &c. L. for 50. LI for 51, &c. LX. for 60. LXI, for 61, &c. LXX. for 70. LXXI. for 71, &c. LXXX. for 80. LXXXI. for 81, &c. XC. for 90. XCI. for 91, &c. C. for 100. CC. for 200. CCC. for 300. CCCC. for 400. D. or IO. for 500. DC. for 600, &c. M. or CIO for 1000, &c. Thus the present Year 1774 is wrote MDCCLXXIV.

ADDITION

IS the putting together two or more Numbers or Sums, in order to make them one Total, or whole Sum.

Here we must always observe to set the Numbers to be added, orderly one under the other; that is, Units under Units, Tens under Tens, Hundreds under Hundreds, &c. as in the subseqent Examples.

Addition of Numbers of one Denomination.

Yards.	Gallons.	Pounds.
Tens Units	Hund. Tens Units	X of Th. Thous. Hund. Tens Units
2 4	7 5 6	5 7 9 6 2
4 2	4 3 2	3 9 7 4 4
6 8	5 7 8	6 7 2 2 2
8 6	6 9 6	7 9 6 7 4
2 4	4 2 2	. 2 4 9 2
4 2	9 7 8	. . 3 9 0
2 8 6	3 5 6 2	2 4 7 4 8 4

In Addition of simple Numbers, whether it be *Yards*, *Gallons*, *Pounds*, or any Thing else, remember to carry 1, for every 10 you find in the Row or Rank of Figures being Units, to the next Row of Tens; and the like from the Rank of Tens to the Row of Hundreds, &c. and whatever makes in the last, you must set it down, amount to what will. Thus:

The Numbers above are set down in Order, as before directed; that is, Units under Units, Tens under Tens, &c. may be plainly understood, by being indicated at the Head

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Head of each Row or Rank with Units, Tens, Hundreds, &c. Then in casting up each Example, to know its Total, I begin at the Right-Hand, or Units Rank, of the first Example, and say 2 and 4 is 6, and 2 is 8, and 8 is 16, and 6 is 22, and 4 is 26; in which Row there are two Tens and 6 over; wherefore I set down 6 just under its own Rank, and carry two to the next or last Row, and say, 2 that I carry and 4 makes 6, and 2 is 8, and 8 is 16, and 6 is 22, and 4 is 26, and 2 is 28; and, it being the last Row, I set down the Amount, *viz.* 28; so that the Total Number of *Yards* is found to be (by this Method) at the Bottom 286. And the next, or second Example, is found by the same Method to be 3562 *Gallens*. And, in the third and last Example, the total Number of Pounds is found to be 247484. And so the Total of any other Example of the same Kind, *viz.* simple Numbers of one Denomination, may be found. *Note.* That when any of the Ranks amount to just 10, 20, 30, 40, 50, &c. then you must set down the 0 under its proper Rank, and carry either 1, 2, 3, 4, or 5, according to the Number of Tens that you find, to the next Row; and so you must always do, when it so happens, whether in the first, second, or third Row; or in any other except the last, where what it amounts to must be set down without any Reserve or Carriage in the Mind, because there is no other Row or Rank to carry to, as was hinted before.

Addition of mixed Numbers.

Note. 4 Farthings make 1 Penny, 12 Pence make 1 Shilling, 20 Shillings make 1 Pound Sterling.

Libra in *Latin* signifying a Pound, *l.* therefore stands for Pounds.

Solidus in *Latin* signifying a Shilling, *s.* therefore stands for Shillings.

Denarius in *Latin* signifying a Penny, *d.* therefore stands for Pence.

Quadrans in *Latin* signifying a Farthing, *q.* therefore stands for Farthings.

Observe, that Pounds be set directly under Pounds, Shillings under Shillings, Pence under Pence, and Farthings under Farthings.

But, before you proceed, get this TABLE of Pence by Heart, thus 30*d.* is Half a Crown, then 60*d.* is 5*s.* again

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40d. is 3s. 4d. then 80d. is 6s. 8d. Again, 50d. is 4s. 2d. then 100d. is 8s. 4d. &c. 100lb. of Cheefe at 3d. the lb. comes to three Times 8s. 4d. or 100 of Faggots, 120 to the Hundred, at 1d. a-piece, comes to 10s. as in the Table.

d.		s.	d.	s.	is	l.	s.
20	is	1	8	30	—	1	10
30	—	2	6	40	—	2	—
40	—	3	4	50	—	2	10
50	—	4	2	60	—	3	—
60	—	5	—	70	—	3	10
70	—	5	10	80	—	4	—
80	—	6	8	90	—	4	10
90	—	7	6	100	—	5	—
100	—	8	4	110	—	5	10
110	—	9	2	120	—	6	—
120	—	10	—	130	—	6	10

Then, for every Crown that a Hundred of Faggots cost, reckon an Halfpenny; if the Faggot costs me three Halfpence, one Hundred will cost 15s. because there are three Crowns in it.

Note, That Boys may improve themselves very much in reckoning up divers Things, after they have by Heart the Table afore said, and learned this Rule of Addition.

As 100 Yards of Tape at one Penny the Yard, the Table tells you it comes to 8s. 4d.

An Hundred Yards of Galloon, at one Penny Halfpenny the Yard.

In the Table 100d. is - - - - - 8s. 4d.

And half that Sum is - - - - - 4s. 2d.

Answer 12s. 6d.

If one Pound of any Thing costs 7d. $\frac{1}{2}$ that is 7d. Halfpenny, what will 280lb. Weight cost after that Rate? Performed by Addition thus;

	l.	s.	d.
200 Sixpences make 100s. or - - - - -	5	—	—
80 Sixpences make - - - - -	2	—	—
200 Pence - - - - -	—	16	8
80 Pence is a Noble, or - - - - -	—	6	8
200 Halfpennies is 100 Pence - - - - -	—	8	4
80 Halfpennies make 10 G oats, or - - - - -	—	3	4
Price of the Goods	8	15	—

Note,

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Note, Now you have by Heart the Table of Pence, you may cast up any Sum of Money without dotting, for, when you know the Number of Pence, you may, by this Table, know how many Shillings to carry to the Shillings Place. And, for the Number of Shillings in the Row of Shillings, you know that 70 Shillings is 3*l.* 10*s.*

(10)	(20)	(12)	
1	1	1	12 set over the Pence shews, that, for every 12 I find in the Pence Row, I am to carry 1 to the Shillings; for so many 20 <i>s.</i> as I find in the Shillings Row, 1 to the Place of Pounds as aforesaid.
17	16	1	
20	11	7	
23	18	9	
73	17	10	But the easiest Way of casting up this Sum (for the young Learner) is by using Dots, thus:
136	4	3	

Beginning at the Pence; I say 10*d.* and 9*d.* is 19*d.* where against the 9 I set a Dot for 12*d.* (or you may make your Dots on Waste-Paper) and what is more or above 12 I carry to the next Figure, *viz.* 7, and it makes 14, where I set a Dot also for 12, and carry the remaining 2 to the 1 on the Top, makes 3; which 3*d.* I set between the Lines, as you see in the Example.

Next, I look how many Dots there are, and find 2, which I carry to the Row of Shillings, saying, 2 that I carry and 17*s.* is 19, and 18 is 37, where against the 18 I set a Dot for 20*s.* or 1*l.* and carry the odd 17*s.* upwards, saying 17*s.* I carry and 11 is 28, where I set a Dot against the 11 for another 20*s.* and carry the remaining 8 to the 16 on the Top, saying, 8 I carry and 16 make 24*s.* where I set down a Dot for 20*s.* and set between the Lines the remaining 4*s.* under the Row of Shillings.

Note, That you may sum up the Shillings Row without dotting, thus; saying, 2*s.* I carry from the Place of Pence, and 7 is 9, and 8 is 17, and 1 is 18, and 6 is 24, and 10 is 34, and 10 is 44, and 10 is 54, and 10 is 64, that is 3*l.* 4*s.* then the 4*s.* being set between the Lines, the 3*l.* is to be carried to the Pounds.

Lastly, The 3 Dots for the 3*l.* found in the Place of Shillings I carry to the Pounds, saying, 3 that I carry and 3 is 6, and 3 is 9, and 7 on the Top makes 16, the remaining 6 I set between the Lines, under the first Row of the Pounds, and I carry 1 to the last Row, saying, 1 that I carry and 7 is 8, and 2 is 10, and 2 is 12, and 1 is 13, which

which being set between the Lines, the whole Sum comes to 136*l.* 4*s.* 3*d.*

Note, That when you are to write a Bill of several small parcels, begin it in Order of Pounds, Shillings, and Pence, 3:9, and when you are to set down 16*d.* set down 1*s.* 4*d.* or to set down 23*s.* you must set 1*l.* 3*s.* 0*d.*

If a Man owes me the three following Sums of Money, what come they to in the Whole?

<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>Note</i> , That the 7 <i>d.</i> $\frac{1}{2}$ is seven Pence
202	17	7 $\frac{1}{2}$	Half-penny; and 1 <i>d.</i> $\frac{1}{4}$ is one Penny
703	1	9	Farthing; and in the Total Sum between
906	10	1 $\frac{1}{4}$	the Lines 5 <i>d.</i> $\frac{3}{4}$ is Five Pence three Far-
812	9	5 $\frac{3}{4}$	things.

To cast the three Sums I do thus; the $\frac{1}{4}$ *d.* which is the Farthing, and the $\frac{1}{2}$ the Half-penny, make $\frac{3}{4}$, or three Farthings, which is set between the Lines; next 1*d.* and 9*d.* is 10*d.* and 7*d.* is 17*d.* where against the 7 is set a Dot for 12*d.* and set the odd 5*d.* between the Lines.

Next, 1 that I carry from the Place of Pence, and 10*s.* is 11, and 1 is 12, and 17*s.* is 29. I set down the remaining 9*s.* between the Lines, and the 20*s.* making 1*l.* I carry to the Place of Pounds:

Saying, 1 I carry and 6 is 7, and 3 is 10, and 2 is 12, where I set a Dot for 10, and set the remaining 2 between the Lines.

Next, I carry the Dot for 10, as 1 to the middle Row, (being all Cyphers) it is but 1 still, so I set the 1 under the Row of Cyphers, and proceed to the last Row;

Saying, 9 and 7 is 16, and 2 at the Top is 18, which I set between the Lines, and the whole Sum comes to 1812*l.* 9*s.* 5*d.* $\frac{3}{4}$

(1)

Due to	<i>l.</i>	<i>s.</i>	<i>d.</i>
Mr. Armstrong	4	12	6
Mr. Benson	7	6	9
Mr. Cox	4	12	0
Mr. Daniel	6	17	7
Mr. Eaton	5	6	6
Mr. Fletcher	4	12	3
Mr. Gray	6	0	0
Mr. Fellows	5	15	4
	45	02	11

I begin and say, 4 and 3 is 7, and 6 is 13, and 7 is 20, and

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and 9 is 29, and 6 makes 35*d.* now 30*d.* according to the Table is 2*s.* 6*d.* and 5*d.* makes 2*s.* 11*d.* I set down 11 exactly under the Rank of Pence, and say, 2*s.* that I carry (which I do to the Rank of Shillings) and 5 is 7, and 2 is 9, (for I only take the Unit Rank of Shillings) and 6 is 15, and 7 makes 22, and 2 is 24, and 6 is 30, and 2 makes 32; and now being come to the Top of the Sum, and it making 32, I come down with the Tens of Shillings, saying, 32 and 10 is 42, and 10 is 52, and 10 is 62, and 10 is 72, and 10 makes 82*s.* and the Table telling me that 80*s.* is 4*l.* I know therefore 82*s.* is 4*l.* 2*s.* wherefore I set down the remaining 2*s.* just under the Row of Shillings, and carry 4*l.* to the Pounds; saying, 4 that I carry, and 5 is 9, and 6 is 15, and 4 is 19, and 5 is 24, and 6 is 30, and 4 is 34, and 7 is 41, and 4 makes 45*l.* so that the Total of those several Sums of Money, due to those several Persons, amounts to 45*l.* 2*s.* 11*d.* as in the Example.

	(2)	l.	s.	d.
Bought	{ Tobacco -	46	10	9
	{ Sugar - -	79	16	0
	{ Indigo - -	42	18	3
Rec. for	{ Broad-Cloth	66	12	4
	{ Canary - -	90	16	0
	{ Port - -	84	17	6
	{ Rice - -	24	12	0
	{ Logwood -	60	10	0
		496 12 10		

In this second Example of Money received, I begin at the Right-Hand; and say, 6 and 4 is 10, and 3 is 13, and 9 makes 22, and 22*d.* being 1*s.* 10*d.* I set down 10, and carry 1*s.* to the Shillings; saying, 1 that I carry and 2 is 3, and 7 is 10, and 6 is 16, and 2 is 18, and 8 is 26, and 6 makes 32; then I come down with the Tens, saying, 32 and 10 makes 42, &c. and I find at the Bottom it comes to 112*s.* which making 5*l.* 12*s.* I set down 12*s.* and carry 5*l.* to the Pounds, saying, 5 that I carry and 4 is 9, &c. I find that at the Top it amounts to 36, wherefore I set down 6 exactly under its own Rank, *viz.* the Rank of Units, of Pounds, and carry 3 for the Tens that are in 30 (for at all Times, in the first Denomination of Addition, whether of Money, Weight, or Measure; that is, in the Deno

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Denomination of Pounds, Tons, or Yards, you must cast them up as Sums of one Denomination; that is, for every Ten carrying one to the next, &c. saying, 3 that I carry, and 6 is 9, and 2 is 11, and 8 is 19, &c. and find that at the Top it comes to 49; wherefore I set down 49 before the 6; and the Total amounts to 496*l.* 12*s.* 10*d.*

More Examples for Practice.

10	20	12	4	10	20	12	4	10	20	12	4
<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>		<i>l.</i>	<i>s.</i>	<i>d.</i>	
17	12	6	$\frac{1}{4}$	246	12	3	$\frac{1}{2}$	4	10	6	
20	10	2		178	10	9		—	7	9	
50	—	—		46	16	6		1	—	—	
44	12	8	$\frac{1}{2}$	100	—	—		1	1	—	
60	14	—		72	10	4		—	4	6	
29	16	6	$\frac{3}{4}$	69	16	6	$\frac{3}{4}$	—	10	0	
16	10	—		460	2	6		4	14	4	
20	—	—		49	10	—		—	7	6	
27	11	4	$\frac{1}{2}$	17	4	—		—	1	6	
17	4	—		22	10	—		—	2	6	
20	10	3		164	12	9		3	10	9	
46	16	8		75	10	4		1	10	—	
Total	371	18	3 —	1403	16	—	$\frac{1}{4}$	18	—	4	

Addition of Avoirdupois Weight.

By this Weight are weighed all Kind of Grocery Goods or Wares, or Goods subject to Waste; as Tobacco, Sugar, Fruit, and Drugs; as also Butter, Cheese, Allum, Tallow, Flesh, Iron, Brass, Copper, Lead, Tin, or Pewter; Pitch, Tar, Resin, Hemp, Flax, Soap, Salt, and all Kind of garbled Goods; that is, those Goods that have Dust, Dross, or Waste.

A Table of this Weight is as follows, viz.

16 Drams	is	1 Ounce,	mark'd	-	-	dr. Drams
16 Ounces	1 Pound	-	-	-	-	oz. Ounces
28 Pounds	1 Quarter of a Hundred	}		lb. Pounds		
Weight,	112 Pounds			Quarters		
4 Quarters	1 Hundred Weight	-	-	Hundreds		
20 Hundred Weight	1 Ton	-	-	T. Ton		

Small

Small Weight.

			Small Weight.						
C.	q.	lb.	10	4	28	16	C.	q.	lb.
4	1	16	24	1	12	4	9	1	19
4	2	24	42	2	—	11	4	3	26
6	3	6	16	1	12	12	7	1	—
7	—	12	25	3	24	13	5	3	27
9	1	20	19	—	20	10	4	3	—
6	2	—	26	1	22	14	2	2	2
39	3	22	154	3	10	—	34	3	18
							45	1	3

In the first of these Examples, I begin at the Right-Hand, to wit, at the Denomination of Pounds, and stop at every 28, so many Pounds make a Quarter; that is, at every 28 I make a Dot, and I find two 28's and 22lb. over; wherefore I set down 22, and carry 2 qrs to the Quarters, and adding them up find them 11, which is 2C. and 3qrs. over; wherefore I set down 3, and carry 2 to the Hundreds; which also, added up, make 39; so that the Total Weight is 39C. 3qrs. 22lb. &c.

Because Grocers send for small Parcels weekly by the Carrier, they commonly write the Bills of Carriage thus;

	C.	q.	lb.	l.	s.	d.
A Parcel down - -	5	3	14	0	3	7
Boxes up to London -	0	1	19	0	1	1

Note, That the first Line shews that the Parcel that came down by the Carrier weighed 5C. 3qrs. 14lb. and the Carriage came to 3s. 7d. &c.

Note, That in weighing at the Water-side, or elsewhere, they do not weigh by the Ton in great Weight, though some Goods are sold by it, as Iron, Logwood, Cheese, &c. but by Hundreds, Quarters, and Pounds, which are afterwards computed by Tons, &c.

Addition of Troy Weight.

This Weight is subdivided in common thus;

- 24 Grains is a Penny-weight, marked - gr.
- 20 Penny-weights is an Ounce - - - oz.
- 12 Ounces is a Pound - - - - - lb.

By this Weight, Silver, Gold, Liquors, Amber, and Jewels, are weighed, and till of late Years Bread and Flour.

Note,

Note, That a Grain of Corn is supposed to be the Origin of the least Subdivision herein mentioned; and formerly a Silver Penny weighed the 20th Part of an Ounce, from whence it took it's Name.

Note also, That 25 lb. is a Quarter of a Hundred of this Weight, 100 lb. is a Hundred Weight, and 20 Hundred Ton of Gold or Silver.

Examples of Troy Weight.

6 Ingots of Silver, Wt. viz.					10	12	20	24	
lb. oz. pw. gr.					lb.	oz.	pw.	gr.	
N ^o 1	Wt.	4	5	12	11	14	6	10	21
2		5	4	16	17	24	10	11	12
3		3	11	19	20	21	6	7	10
4		4	6	7	12	22	10	12	14
5		5	1	11	12	16	11	12	13
6		4	11	12	13	21	7	6	17
		28	6	—	12	122	5	1	15

In the Denomination of Grains I stop at 24, and find it amount to 3 Pennyweights, and 12 Grains over; wherefore I set down 12 Grains, and carry 3 Pennyweights to the Pennyweights; then I say, 3 that I carry, and 2 is 5, and 1 is 6, and 7 is 13, and 9 is 22, and 6 is 28, and 2 is 30; and then coming down with the Tens, I say, 30 and 10 is 40, and 10 is 50, &c. (Just as I do in *Addition of Money*; for, as there 20s. make a Pound, so here 20 Pennyweights make an Ounce) and find it come just to 80; now in 80 there are just 4 Twenties, or 4 Ounces; wherefore I set down —, and carry 4 to the Ounces, and find them to amount to 42, which makes 3 Pounds, and 6 Ounces over; wherefore I set down 6, and carry 3 to the Pounds; saying, 3 I carry and 4 is 7, and 5 is 12, &c. and find they come to 28; so the Total is 28 lb. 6 oz. — pw. 12 gr. and so of the rest.

Apothecaries Weight and Marks.

This is the same with Troy Weight, but only differently subdivided, as here under.

12	8	3	20	<i>Note</i> , 20 Grains make a Scruple ∅ 3 Scruples 1 Dram 3 8 Drams 1 Ounce 3 12 Ounces 1 Pound lb
1b 3	3	∅	gr.	
98 11	7	2	18	
45 10	6	1	18	
62 9	4	2	13	
207 —	3	1	9	

This

This

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This is cast up as the other, by dotting each Row, according to the Figures on the Top of the Sum.

R stands for, Take thou; *ana*, of each Medicine a like Quantity; *M.* an Handful; *℥. S.* a sufficient Quantity.

Note, That the Apothecaries sell their Goods by Avoirdupois Weight, but compound their Medicines by this of Troy Weight, 20 Grains of which make a Scruple, &c. as before.

Measures in Length.

	Dozens	¹² Yards	⁴ Quarters	⁴ Nails	
	756	8	2	2	
	342	9	3	1	
	753	6	2	2	
	1853	1	—	1	
	³ Miles	⁸ Furlongs	¹¹ Scores	²⁰ Yards	³ Feet
Leagues	763	2	4	6	17
	597	1	6	5	14
	753	—	7	6	13
	2114	2	2	8	5

Land Measure.

	⁴ Acres	⁴⁰ Roods	⁴⁰ Poles
	542	2	12
	761	1	13
	582	1	19
	1886	1	4

Dry Measure.

	⁴ Lasts	⁸ Quarters	⁴ Bushels	⁴ Pecks
	464	3	4	2
	765	4	3	3
	452	8	6	1
	1685	—	6	2

Coal Measure.

	⁴ Chaldrons	⁸ Quarters	⁴ Bushels	⁴ Pecks
	27	3	4	1
	72	2	7	3
	19	1	6	2
	120	—	2	2

This for Coals at 36 Bushels the Chaldron. Scotch Coal is sold by the Hundred Weight.

Liquid

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Liquid Measure for Wine.

	²	²	⁶³	⁴	²
Tuns	Butts	Hogsheads	Gallons	Quarts	Pints
84	1	1	61	2	—
55	—	—	60	1	1
92	1	1	62	3	1
223	—	—	58	3	—

Ale Measure.

	²	²	²	⁸
Hogsheads	Barrels	Kilderkins	Firkins	Gallons
7	1	—	1	5
8	1	1	1	7
9	—	1	—	6
25	—	—	—	2

Beer Measure.

2	2	2	9
1	1	1	8
—	1	—	7
5	1	—	1
8	—	—	—

Note, That 8 Gallons is a Firkin of Ale or Soap, 9 Gallons is a Firkin of Beer, $18\frac{1}{2}$ Gallons a Runlet of Wine, 56lb. a Firkin of Butter, 42 Gallons a Tierce, 63 Gallons a Hogshead, 2 Hogsheads a Pipe or Butt, 2 Pipes or Butts a Tun of Wine, being 252 Gallons. A Sack of Wheat, 5 Bushels, a

Coomb 4, a Weigh 5 Quarters, 2 Weighs a Last. Four Pecks are a Bushel of Land-Measure, 5 Pecks are Bushel of Water-Measure. Note, That every Bushel with plain even Bottom, should be made $18\frac{1}{2}$ Inches wide throughout, and 8 Inches deep. A Chaldron of Coals 36 Bushels. A stone is 8lb. and in some Countries 'tis 14lb. A Barrel of Soap is 256lb. Half a Barrel 128 lb. and a Firkin 64 lb. A Weigh of Cheese 200 $\frac{1}{2}$, or 280lb. A Quire of Paper 24 Sheets, Ream of Paper 20 Quires, a Bale of Paper 10 Reams.

Addition of Time.

	¹²	⁴	⁷	²⁴	⁶⁰
Years	Months	Weeks	Days	Hours	Min.
673	7	3	3	18	27
542	9	2	6	17	38
216	5	2	3	12	5

Note, That 60 Minutes are an Hour, 24 Hours a Day and Night, &c.

Proof

Proof of Addition.

After you have cast up the Sum, and set down the Total on Waste-Paper, begin at the Top, and cast it downwards, and, if this Sum agrees with the former Total, it is right, otherwise not. This I have often proved to be the best and quickest Way.

SUBTRACTION.

SUBTRACTION taketh a lesser Number out of a greater, and leaveth the Difference.

Always set the biggest Number uppermost, and, with the same Care and Order as in Addition, set the lesser Number under it, so that Units stand under Units, Tens under Tens. Whatever you used to stop at in Addition, whether at one Denomination, or at several, of that same Number must you borrow in Subtraction, when Need requires remembering to pay or carry 1 to the next Place on the Left-hand.

If you have 847 Sheep in a Field, and are to take out 533 of them to carry to a Fair or Market, how many will there be left in the Field?

Sheep in the Field, 847

Sheep to be taken out, 533

Now, to subtract 533 out of 847, begin on the Right-hand, thus:

Take 3 out of 7, rests 4, to be put under the Line; next 3 out of 4, rests 1; lastly, take 5 from 8, rests 3, to be put under the Line; so that there remain in the Field 314 Sheep, which you may prove, by adding 314 to 533, and the Sum will be 847.

Sheep in the Field, 847

Sheep to be taken out, 533

Remain in the Field, 314

Proof 847

If King Henry VIII. was born in the Year of our Lord 1491, how many Years is it since?

The present Year of our Lord 1774

The Year of K. Henry's Birth 1491

Years 283

This you may subtract as the last Question, or thus :
Take 1 from 4, rests 3 to set between the Lines ; next the
9 from 7 I cannot, so I borrow 10, and say, 9 from 17,
rests 8 to set between the Lines ; next 1 that I borrow and
4 is 5, take 5 from 7, rests 2 ; so that it is 283 Years since
King Henry VIII. was born.

By this Rule you may know how long it is since any
Thing worthy of Note hath happened.

*The Anabaptists began to appear in the Year of our Lord
1521, in Saxony, by Nicholas Storke and Thomas Munster,
Luther and Melancton affirm.*

The present Year	1774
The Year they began in	1521

Years since 253

*The Brownists in 1595, by Robert Brown, Barrow, and
Greenwood ; ——— Presbyterians in 1554, by Calvin and
Beza in Geneva : But in England by Faithful Comin, a
Dominican Frier, who passed under the Notion of a zealous
Catholic, in the Year 1567, and by Thomas Heath, a Jesuit,
in the Year 1568.*

*Independents began a little before the Year 1640, by Good
win and Nye, and Sympson and Burrows, alias Brows.*

The present Year	1774
The Year they began in	1640

Years since 134

*The Antimonians began in 1645, by Crisp, Saltmarsh, Trash,
road, and Eaton.*

The present Year	1774
The Year they began in	1645

Years since 129

*Quakerism in the Year 1655, by George Fox, William
Swisbury, and James Nailer.*

The present Year	1774
The Year they began in	1655

Years since 119

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Thus any Distance of Time, that is from any particular Date of a Year, may be known by subtracting that Date from the present Date of the Year; for a further Proof of which take the following Examples.

The present Year	1774
The Fire of London	1666

Years since 108

The present Year	1774
Gunpowder Treason	1605

Years since 169

If 5643l. be owing to a Merchant, and the Debtor pay thereof at one Time 4754l. How much of the said Sum of 5643l. remains unpaid?

Take Pen and Paper, and	5643
set the two Sums thus,	4754
	889

Beginning on the Right-Hand (as before) I say, take 4 of 3 I cannot, therefore I borrow 10, and add it to the 3 and it makes 13; then I say, take the said 4 from the 13, rests 9, which 9 I set under the Line.

Next, because I borrow 10 to add to the Figure 3, I call that 10 but 1, saying, 1 that I borrowed and 5 makes 6, take 6 from 4 above it I cannot, therefore (as before) I borrow 10 again, and add it to the 4, makes 14, then I say, take 6 from 14, rests 8 to set under the Line.

Next, take 1 that I borrowed at 5, and the 7 makes 8, take 8 from 6 above it, I cannot, therefore I borrow 10 and add it to the 6, makes 16, then I say, take 8 from 16, rests 8 to be set under the Line.

Lastly, Because I borrowed 10 to add to 6, I pay it again at the 4, saying, 1 that I borrowed and 4 makes 5, take 5 from the 5 above, rests 0, to be set below the Line, which doth not add to the Number at all, but fills up a Place.

So that 4754l. being paid of the Sum 5643l. there remains yet unpaid just 889l. as you see above.

EXAMPLE. Suppose Mr. Ayres owes Mr. Boyden 5643 Pounds, whereof Mr. Ayres hath paid Mr. Boyden the Sum of 4754 Pounds in Part; what remains due?

Owing	323
Paid	146
Rests due	177

Here the lesser Number 146 stands under the greater 323; and to find the Remainder or Sum resting due, I say, 6 from 3 I cannot, but 6 from 13, (for you must always borrow 10 of the next Figure in the same upper Line, and put it to the Figure or Cypher that is directly over the Figure you subtract) and there remains 7; then 1 that I borrow and 4 is 5, (for, as I borrowed 10 or 1 out of 2, so I must pay the said 1 or 10 to the Figure again, as above hinted :) I say, 5 from 2 I cannot, but 5 from 12, (borrowing 10 and putting it to the Figure that stands immediately under it, which here is 4, as above directed) and there remains 7; then 1 that I borrowed and 1 is 2, from 3 the upper Figure, and there rests 1, and so the Example is done; and by it is shewn, That *A.* still owes *B.* 177 Pounds, as appears in the Work; and for a Proof of its Verity add 177 the Remainder to 146, the lesser of the two given Numbers, and it will make 323, being the same with the greater Number, or Sum of Money first due; and therefore a sure Proof of the Truth and Certainty of the Rule. And as *Subtraction* is proved by *Addition*, so may *Addition* be proved by *Subtraction*: For if the two aforesaid Numbers, viz. 323 and 146, are added, their Total is 469; from which, if you deduct 146, the Remainder will be the greater Number; or if you subtract 323 from the said 469, the Remainder will be 146, the lesser Number.

All Examples or Sums in *Subtraction*, of one Denomination, are performed as above, without any Variation.

More Examples for Practice.

	lb.	Yards.	Gallons.	Pounds.
From	4796	3700	47200	479672
Take	2939	1976	31976	97694
Remains	1867	1724	15224	381978
Proof	4796	3700	47200	479672

Suppose 5643 l. be owing to a Merchant, whereof the Debtor has paid 4754 l. 12s. 8d. how much is unpaid?

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Note, That because the Money paid is odd, that is, hath Shillings and Pence, besides Pounds, set Cyphers in the Place of Shillings and Pence, and the Sum will stand thus.

To subtract the Sum I do thus :

	10	20	12	
	<i>l.</i>	<i>s.</i>	<i>d.</i>	
Lent	5643	—	—	Saying, take 8 from 0, that cannot do, but I borrow 12 at Top
Paid	4754	12	8	and say, take 8 <i>d.</i> from 12 <i>d.</i> rests 4 <i>d.</i> to set under the Line.
Unpaid	888	7	4	Next, the 12 I borrowed at the Pence, I pay as 1 at the Shillings saying, 1 that I borrowed, and 12

make 13, take 13 from 0 I cannot, therefore I borrow 20 and say, take 13 from 20, rests 7*s.*

Next, 1 that I borrowed at Shillings, and 4 of the Pounds make 5, take 5 from 3 I cannot, therefore I borrow 10 and add it to the 3, it makes 13; then take 5 from 13, and rests 8, to be set under the Line, as above, finishing as the last Example, and there remains unpaid 888*l.* 7*s.* 4*d.* Proof, add the Sum paid and that unpaid together, and if it make the Sum lent, it is right, otherwise not.

*If a Man owed to another 130*l.* 2*s.* 8*d.* and hath paid of it 36*l.* 12*s.* 9*d.* what remains?*

	10	20	12
	<i>l.</i>	<i>s.</i>	<i>d.</i>
Set the Sum thus	—	—	—
Lent	130	02	08
Paid	036	12	09
Unpaid	93	09	11

Again, be very exact in setting the Figures under each other even; and that the Cypher 0 is on the Place of Hundreds, next the 36*l.* which fills up the Place even with the 130*l.* as the Cyphers by the 2*s.* 8*d.* and the 9*d.* above the Cypher next the Left-Hand make any Number never the bigger, yet a Cypher in the Middle of any Number is of Service; and those next the Right-Hand in any Number in vulgar Arithmetic; for the Number 2030 is read two Thousand and Thirty, because there is a Cypher in the Place of Hundreds, and a Cypher in the Place of Units or Ones which you may perceive by this following Example.

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The present Year of our Lord is 1774

The last Number above is 2030

Now most Boys will readily read those four Figures 1774, the Date of the Year, but many will mistake in the other.

The Figure 1 being one Thousand, then the Figure 2 under it must needs be 2 Thousands, then the 7 over the 0 is seven hundred; next, the Figure 7 being seventy, the 3 under that must be Thirty, &c.

Now for the true Subtraction of the last Example.

First, I say, take 9d. from 8d. above it, that I cannot do, therefore I borrow the 12 at Top, and add it to the 8d. makes 20d. then I say, take 9d. from 20d. rests 11d. which I set between the Lines.

Next, because I borrowed the 12 at Top at the Pence-Place, I carry it as 1 to the Place of Shillings, saying 1 that I borrow, and 12s. make 13s. take 13s. from 2s. I cannot, therefore I borrow the 20 at Top, and add it to the 1 makes 22, then take the 13s. from 22s. rests 9s. which I set between the Lines.

Next, the 20s. or 1l. that I borrowed at the Shillings, I carry to the Place of Pounds, saying, 1 that I borrowed and 6 is 7, take 7 from 0 I cannot, therefore I borrow the 10 at Top, and say, take 7 from 10, rests 3, to be set between the Lines.

Next, 1 that I borrowed and 3 makes 4, take 4 from 3 I cannot, therefore I borrow the 10, as I did before, and say, take 4 from 13, rests 9, which 9 I set between the Lines.

Last'y, 1 that I borrowed in the Middle of the Pounds I carry to the 0 next the Left Hand, and say, 1 that I carry and 0 is 1, therefore I take that 1 from the 1 above, rests 0 to be set between the Lines.

So that there is unpaid 93l. 9s. 11d. of the 130l. 2s. 8d. which you may prove by adding the Sum paid and that unpaid together.

Subtraction of diverse Denominations.

Of Money.

Suppose Mr. Cotton owes Mr. Dutton 9l. 2s. 6d. and Mr. C. hath paid Mr. D. in Part 6l. 16s. 4d. what remains due to Mr. D? Answer, due to Mr. D. 2l. 6s. 2d. as by this Example.

G. 3.

Due.

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	<i>l.</i>	<i>s.</i>	<i>d.</i>
Due	-	9	02 6
Paid	-	6	16 4
Refts due	2	06	2

Take 4*d.* from 6*d.* and there remains 2*d.* then 16*s.* from 2*s.* I cannot, but borrow one Integer of the next Denomination, or one Pound, which is 20*s.* I say 16 from 20, and there rests 4, and taking the over Number 2, and putting it to the Remainder 4 makes 6; wherefore I put down 06 in the Place of Shillings, and say, 1 that I borrow and 6 is 7; now 7*l.* from 9*l.* there remains 2*l.* so the Money resting due to Mr. *Dutton* is 2*l.* 6*s.* 2*d.* as in the Example.

	10	20	12	4
	<i>l.</i>	<i>s.</i>	<i>d.</i>	
Sold for	242	16	03	$\frac{3}{4}$
Paid in Part	174	12	06	$\frac{1}{2}$
Answer	68	03	09	$\frac{1}{4}$

Again, Mr. *Evans* sell to Mr. *Forth* Spanish Wool to the Value of 242*l.* 16*s.* 3*d.* $\frac{3}{4}$; and pays present Money, and by a Note of Mr. *Goodwin* the Sum of 174*l.* 12*s.* 6*d.* $\frac{1}{2}$, what Money remains unpaid from Mr. *Forth*? Answer, 68*l.* 3*s.* 9*d.* $\frac{1}{4}$.

Here I say, 2 Farthings (or a Halfpenny) from 3 Farthings, and there remains 1 or $\frac{1}{4}$; which I set down in its proper Place, *viz.* under the Denomination of Farthings; then 6 from 3 I cannot, but 6 from 12, (as marked over the Denomination) and there remains 6, and 3*d.* over it makes 9*d.* which I place under the Line in its right Place, *viz.* of Pence; then 1 that I borrowed, (that is, 1 Shilling) and 12 is 13; 13*s.* from 16*s.* and there rests 3, which I likewise set down under its own Rank; then 4 from 2 I cannot, but 4 from 12 (borrowing 10, as in *Addition* I carry 1 for every 10) and there rests 8; then 1 that I borrow and 7 makes 8; 8 from 4 I cannot, but 8 from 14 and there remains 6; so that the Sum remaining due is 68*l.* 3*s.* 9*d.* $\frac{1}{4}$, as in the Work. And for its Proof, you must add the Remainder, 68*l.* 3*s.* 9*d.* $\frac{1}{4}$, to the lesser, or under Sum, 174*l.* 12*s.* and 6*d.* $\frac{1}{2}$, and it makes 242*l.* 16*s.* and 3*d.* $\frac{3}{4}$, the Sum first due, which is a Proof of the Work's being right. See the Example. Or you may subtract the Sum that yet remains unpaid, *viz.* 68*l.* 3*s.* 9*d.* $\frac{1}{4}$, out of the whole Sum, *viz.* 242*l.* 16*s.* 3*d.* $\frac{3}{4}$ and you will find the Difference or Remainder will be the Sum paid, *viz.* 174*l.* 12*s.* 6*d.* $\frac{1}{2}$.

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More Examples for Practice.

	10	20	12	4
	l.	s.	d.	
Due	174	16	06	$\frac{1}{4}$
Paid	97	12	04	$\frac{3}{4}$

Remain	77	04	01	$\frac{1}{2}$
--------	----	----	----	---------------

Proof	174	16	06	$\frac{1}{4}$
-------	-----	----	----	---------------

	10	20	12
--	----	----	----

First due	74	00	00
-----------	----	----	----

Paid	46	12	10
------	----	----	----

Balance	27	07	02
---------	----	----	----

Proof	74	00	00
-------	----	----	----

	10	20	12	4
--	----	----	----	---

Due	2471	07	00	
-----	------	----	----	--

Paid	1976	16	06	$\frac{1}{2}$
------	------	----	----	---------------

Remain	494	10	05	$\frac{1}{2}$
--------	-----	----	----	---------------

Proof	2471	07	00	
-------	------	----	----	--

	10	20	12
--	----	----	----

	l.	s.	d.
--	----	----	----

74	10	04
----	----	----

29	12	09
----	----	----

44	17	07
----	----	----

74	10	04
----	----	----

	10	20	12
--	----	----	----

274	16	06
-----	----	----

197	19	04
-----	----	----

76	17	02
----	----	----

274	16	06
-----	----	----

	10	20	12
--	----	----	----

Due	796	00	00
-----	-----	----	----

Paid	279	11	07
------	-----	----	----

Bal.	516	08	05
------	-----	----	----

Proof	796	00	00
-------	-----	----	----

Sometimes a Sum owing may be paid at several Times; then the several Payments must be added together, and their Total deducted from the Sum first due, as in this and the Examples following.

Owing 266/.

Paid at Times	{	20
		15
		30
		90
		17
		24
		60

Paid in all	-	256
-------------	---	-----

Refts due	-	10
-----------	---	----

Proof	-	266
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Due

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	<i>l. s. d.</i>		<i>l. s. d.</i>
Due - -	249 12 0	Received	100 10 0
	{ 24 12 6		{ 6 16 0
	{ 9 14 9		{ 10 00 0
Received	{ 20 00 0	Paid to	{ 5 12 6
at several	{ 16 16 6	several	{ 20 10 0
Times	{ 22 10 2	Persons.	{ 7 09 5
	{ 13 12 6		{ 9 08 6
	{ 7 16 4		{ 7 12 6
Received in all	115 02 9	Paid in all	67 09 0
Refts due	133 09 3	Remains in	} 33 00 0
Proof	249 12 0	the Bag	

Avoirdupois Weight.

	10	20	4	28		10	4	28		10	16	16
	Tons.	C.	qr.	lb.		C.	qr.	lb.		lb.	oz.	dr.
From	44	12	1	10	246	2	12		146	02	10	
Take	39	14	2	06	164	3	22		97	10	12	
	4	17	3	04	81	2	18		48	07	14	
	44	12	1	10	246	2	12		146	02	10	

Troy Weight.

	10	12	20	24		10	20	24
	lb.	oz.	pw.	gr.		oz.	pw.	gr.
From	462	04	10	11	1247	10	12	
Take	196	09	06	16	976	16	17	
Remains	265	07	03	19	270	13	19	
Proof	462	04	10	11	1247	10	12	

And so much for Subtraction; which Method will serve for any Denomination whatever, having Respect to the several Tables of Quantity, as before hinted in Addition.

MULTIPLICATION.

MULTIPLICATION, for its quick Dispatch in Business, may be accounted the most serviceable Rule in Arithmetic; it performeth the Work of many Additions in the most compendious Manner, brings Numbers of great Denominations into small, as Pounds into Shillings, Pence, or Farthings; Tons, into Hundreds, Quarters, Pounds, or Ounces, &c. and by knowing the Value of one Thing, we find the Value of many.

next, 3 Times 5 is 15, and 1 I bore in Mind, make 16; so I set the 6 below the Line, and bear the 10 in Mind as 1; next, I say, 3 Times 6 is 18, and 1 I bore in Mind makes 19, which I set down, and the Work will stand as in the Margin.

How many is 3 Times 472? Set the Figures down as in the Margin; and then say 3 Times 2 is 6, which place under the 2 in the Multiplicand; then 3 Times 7 is 21; set down 1 under 7, and carry 2; for two Tens, as in Addition of one Denomination; then 3 Times 4 is 12, and 2 is 14; which set down, and the Product is 1416, that is, 3 Times 472 makes so much as may be proved by *Addition*, by setting down 472 three Times in Additional Order, and casting it up, which makes the Assertion good in the second Definition, that this Rule compendiously performs the Office of Addition. Likewise the foregoing Examples agree with the first Definition; for as 3 Times 472 makes 1416, so doth 472 Times 3 make the same, *viz.* 1416.

Example. Again, how many makes 742 multiplied by 4?

742 <i>Multiplicand.</i>	} Here I say 4 Times 2 is 8, and	
4 <i>Multiplier.</i>		4 Times 4 is 16; 6 and carry 1; and
2968 <i>Product.</i>		4 Times 7 is 28, and 1 is 29, which I set down; so the whole Product is 2968, as <i>per Example.</i>

More Examples of one Figure in the *Multiplier* are these, *viz.*

<i>Multiplicand.</i>	7420	4444	7460	90704	56789
<i>Multiplier.</i>	5	6	7	8	9
<i>Product.</i>	37100	26664	52220	725632	511101

In Compound Multiplication.

When the *Multiplier* consists of more Figures than one, you must begin with that Figure which is in the Place of Units of the *Multiplier*, and go through the whole *Multiplicand*, by multiplying each Figure of it first by that said Unit Figure, then by the next, to wit, by the Figure in the Place of Tens of the *Multiplier*, then with the third, &c.

to the last; always remembering to place the first Figure of every Product or Line, (for you will ever have as many as you have significant Figures in the *Multiplier*) I say, remember to place the first Figure of each Line exactly and perpendicularly under the Figure you multiply by: and then add the several Lines or Products together, which so collected, gives the total Product required, as in the Examples following, viz.

Example.

How many is, or are. 23 Times 7426? First, 7426
begin, with the Unit Figure 3 in the *Multiplier*, 23
saying, 3 Times 6 is 18; 8 (which I set directly
under 3, by which I multiply) and carry 1; and 22278
3 Times 2 is 6, and 1 is 7; then 3 Times 4 is 12, 14852
and carry 1; then 3 Times 7 is 21, and 1 is 22.
And so I have done with the first Figure of the 170798
Multiplier, viz. 3. Then I go to the next, that is
2, and say, twice 6 is 12; 2 and carry 1; (which 2 is placed
in a direct Line under 2 the multiplying Figure) then twice
2 is 4, and 1 is 5; then twice 4 is 8; and lastly, twice 7 is
14, which I set down: Then I add the two Products together, saying, 8 is 8, &c. and the Total is the right and proper Product, or Result of the Multiplication, viz. 170798.

To know how many Hours there are in one Year.

There are 365 Days in a Year, and 24 Hours in a Day, therefore I multiply 365 by 24, and to do that I set them thus:

$$\begin{array}{r} 365 \\ 24 \\ \hline 1460 \\ 730 \\ \hline 8760 \text{ Hours in a Year.} \end{array}$$

Then I proceed to multiply, saying 4 Times 5 is 20, and set down the Cypher under 4, and carry the two Tens to the next Place, saying 4 Times 6 is 24, and 2 that I carry is 26; wherefore I set down the 6 under the Figure 6, and carry the two Tens to the next Place, saying 4 Times 3 is 12, and 2 that I carry is 14, which I set down.

Having

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Having multiplied the 365 by the Figure 4, then I proceed to multiply it by the Figure 2 of the 24, the Multiplier, after the same Manner as I did the Figure 4:

Saying, 2 Times 5 is 10, set a Cypher under the 2, because I multiply by 2, and bear 1 in Mind. Next, 2 Times 6 is 12, and the 1 I bore in Mind is 13, and the 3 of the 13 I set under the 4, and bear 1 in Mind. Lastly, I say 2 Times 3 is 6, and 1 that I bore in Mind makes 7, which 7 I set under the 1; and now having done multiplying, to finish the Work, I add those two Numbers together, *viz.* the 1460 and 730, just as they stand; and they amount to 8760, as you may see by the Example.

If there be 8760 Hours in one Year, as in the last Example, the Question is, How many Minutes are in 8760 Hours?

Hours in one Year	8760
Minutes in one Hour	60
	———
	525600
	———

Note, That you are to observe to set the 6 of the 60 just under the last Figure of the Multiplicand, next the Right-Hand, and the Cypher 0 by itself; the same ought to be observed, if the Multiplier had been 600, or 6000, or 10, 100, or 1000, &c.

Now for the resolving this Question, begin thus; the Cypher 0 I set under the Line. Next, 6 Times 0 is 0, which 0 I set under the Line under the 6; next, 6 Times 6 is 36, and the odd 6 of the 36 I set under the Line, and bear 3 in Mind for the 30, saying, 6 Times 7 is 42, with the 3 I bore in Mind, make 45, the odd 5 I set between the Lines, and bear four Tens in Mind.

Lastly, 6 Times 8 is 48, with the 4 I bore in Mind makes 52; and the odd 2 I set under the Line, and the 5 of the 52, (having no farther to carry it) I set it also under the Line, and the whole Sum is 525600, as above.

If there are 525600 Minutes in a Year, how many Minutes old may a young Man be, that is 23 Years of Age?

Set the Question down thus, 525600 Minutes in a Year.
23 Years old.

Saying, 3 Times 0 is 0, and set that under 3; next, 3

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Times 0 is 0, and set that under the 2; next, 3 Times 6 is 18, I set the odd 8 under the Line, and bear 1 in Mind; next, 3 Times 5 is 15, and the 1 bore in Mind makes 16, the odd 6 I set under the Line, and bear 1 in Mind, and say 3 Times 2 is 6, and the 1 I bore in Mind makes 7, which I set under the Line. Next, I say 3 Times 5 is 15, which 15 I set under the Line, and the Figure 3 of the Multiplier is done with.

Next, multiply the Figure 2 of the Multiplier, saying, Times 0 is 0, (which 0 I set just under the Figure 2, as you may see below:) Next, 2 Times 0 is 0, which 0 I set under the Figure of 8: Next, 2 Times 6 is 12, (the 2 of the 12 under the 6) and bear 1 in Mind. Next, 2 Times 5 is 10, and the 1 I bore in Mind, makes 11, the odd 1 I set under the 7, and bear 1 in Mind. Next, 2 Times 2 is 4, and the 1 I kept in Mind, makes 5, to set under the 5; 2 Times 5 is 10, and set it down as you see underneath.

Minutes in the Year	- - -	525600
Years of his Age	- - -	23

1576800
1051200

Minutes old	- - -	12088800
-------------	-------	----------

Now I have done multiplying, and the two Lines that come thereof, being added together, make 120988800; so that a young Man of the Age of 23 Years may be said to be 12 Millions, 88 Thousand, 8 Hundred Minutes old.

Note, 365 is set for the Days of a Year above, yet the Julian Account makes it to consist of six Hours more.

Therefore I multiply 6 by 23, the young Man's Age in Years, and it makes 138 Hours; this multiplied by 60, the Minutes in an Hour, makes 8280 Minutes to be added to 12088800 Minutes.

8280

Which makes in all 12097080 Minutes in 23 Years.

What is the Result or total Product of	527527
Multiplied by	285

2637635
4220216
1055054

150345195

$$\begin{array}{r}
 527535 \\
 15728 \\
 \hline
 4220280 \\
 1055070 \\
 3692745 \\
 2637675 \\
 527535 \\
 \hline
 8297070480
 \end{array}$$

$$\begin{array}{r}
 275827 \\
 19725 \\
 \hline
 1379135 \\
 551654 \\
 1930789 \\
 2482443 \\
 275827 \\
 \hline
 5440687575
 \end{array}$$

When Cyphers are intermixt with Figures in the Multiplier, then multiply by the Figures as above; and when you come to a Cypher in the Multiplier, then set down another Cypher exactly and perpendicularly under it; then begin the Multiplicand again with the next Figure to the Cypher in the Multiplier, and go through it in the same Line placing the first Figure of that Product next to the Cypher towards the Left-Hand; but then Care must be taken, that the next Figure or Cypher of the next Line must be set down one Degree farther towards the Left-Hand, and not immediately under the last Figure set down next to the Cypher. As in the following Examples may be fully understood.

$$\begin{array}{r}
 24393 \\
 402 \\
 \hline
 48786 \\
 975720 \\
 \hline
 9805986
 \end{array}$$

$$\begin{array}{r}
 7864371 \\
 23604 \\
 \hline
 31457484 \\
 471862260 \\
 23593113 \\
 15728742 \\
 \hline
 185630613084
 \end{array}$$

$$\begin{array}{r}
 327587 \\
 6030 \\
 \hline
 9827580 \\
 19655160 \\
 \hline
 1975343580
 \end{array}$$

When you have a Cypher or Cyphers in the Multiplier at the Beginning towards the Right Hand, then set it or them backwards from the Place of Units towards the Right Hand; and when you have multiplied by the Figure or Figures, annex the Cypher or Cyphers:

As in these Examples.

$$\begin{array}{r}
 4762 \\
 70 \\
 \hline
 333340
 \end{array}$$

$$\begin{array}{r}
 47962 \\
 400 \\
 \hline
 19184800
 \end{array}$$

$$\begin{array}{r}
 4632 \\
 2600 \\
 \hline
 27792 \\
 9264 \\
 \hline
 12043200
 \end{array}$$

If you have Cyphers in the Units Place, &c. both in the Multiplicand and Multiplier, then neglect the Cyphers in both, and multiply by the Figures, and annex as many Cyphers to the total Product as is the Sum of the Cyphers, both in the Multiplicand and Multiplier :

As in these Examples.

42600	42300	376400
220	12000	2400
852	846	15056
852	423	7528
9372000	507600000	903360000

When you are to multiply by 10, 100, 1000, or 10000; it is only adding or annexing so many Cyphers to the Multiplicand, as is in the Multiplier, that is, either 1, 2, 3, or 4 Cyphers, and the Work is done. *Example.* Suppose I am to multiply 375 by the Numbers above; if I multiply it by 10, then I join 0 to 375, and then it makes, or the Product is, 3750: If by 100, then I annex 00, and then it makes 37500: If by 1000, I put to it 000, and then it produces 375000, And lastly, if by 10000, I then add 0000, and then it makes 3750000, &c. And thus may any Number be multiplied, when the Multiplier consists of an Unit with any Number of Cyphers.

Suppose you want to know how many Half-Crowns there are in 2461. you know that 8 Half-Crowns make a Pound; wherefore set them down thus:

Multiply by $\begin{array}{r} 2461 \\ 8 \end{array}$ the Half-Crowns in a Pound.

Answer $\begin{array}{r} 1968 \end{array}$ Half-Crowns in all.

Again, *In 1968 Half-Crowns, how many Pence?*
Multiply by $\begin{array}{r} 30 \end{array}$ the Pence in a Half-Crown.

Answer $\begin{array}{r} 59040 \end{array}$ Pence in 1968 Half-Crowns.

And this serves to prove, that great Denominations are brought into smaller by this Rule.

Admit

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Admit you wanted to know the Contents of a large Shuffled board Table 34 Feet long, and 4 Feet wide.

Multiply 34 the Length,
by 4 the Breadth, and the

Answer will be 136 square Feet for the true Contents of such a Table.

If I know the Value of a Yard of Broad-Cloth to be 12 Shillings, what is the Value of 220 Yards of the said Cloth in Shillings?

Multiply by 12

44
22

Answer 2640 Shillings, or 132*l*.

If the Wages of one Seaman be 23 Shillings a Month, What are the Wages of 250 Seamen for the same Time?

Multiply by 23

750
500

Answer 5750 Shillings, or 287*l*. 10*s*.

Suppose a Piece of Land be 236 Poles in Length, and 182 in Breadth, How many square Poles are therein?

Note, That a Pole in Length is 16 Feet and an half, and a Pole of Land is a square Piece of Ground, 16 Feet and an half each Way.

This may be multiplied as before, beginning at the Figure 2 of the Breadth, saying, 2 Times 6 is 12, setting the 2 of the 12 under the overmoſt Line, keeping 1 in Mind. Next, 2 Times 3 is 6, and the 1 I kept in Mind makes 7, &c. ſo continue till all the three Figures are done with.

Length in Poles	236
Breadth in Poles	182
	472
	1888
	236

Poles in all the Land 42952

Laſt

Lastly, Adding up the three Rows of Figures thus produced, the Total 42952 will be the square Poles sought for.

How many Barley Corns will reach from London to Bedford, if these Places are 40 Miles asunder?

First set down the whole Distance, viz. 40 Miles.
Then multiply by 8 the Furlongs in a Mile 8

And the Product is 320 Furlongs.
Multiply this by 40, the Poles in a Furlong 40

And the Product is 12800 Poles.
Multiply this by 11, the $\frac{1}{2}$ Yards in a Pole 11

12800
12800

And the Product is 140800 Half Yards.
Multiply this by 18, the Inches in a $\frac{1}{2}$ Yard 18

1126400
140800

And the Product is 2534400 Inches.
Multiply this by 3 the Barley-Corns in an Inch }

And the Product is 7603200 Barley Corns

40 Miles, the Distance from London to Bedford.

Suppose it was asked, how many Barley Corns in Length will reach from London to York, which is commonly accounted to be 150 Miles.

First set down the 150 Miles, and multiply as in the last question, and you will find the last Product to be 28 Millions, 512 Thousand Barley Corns.

Note, An English Mile is 8 Furlongs (as above.)

A Scottish and Irish Mile, about one Mile and an Half English.

A Dutch and Polish Mile, three English Miles and an Half.

A French, Italian, and Turkish League, near Miles and Quarters English Miles.

A German

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A German Mile better than 4 English Miles.

The Russian Mile, about 3 Quarters of an English Mile.

The Arabian Mile, an English Mile and a Quarter.

The Hungarian Mile is 5 Miles English.

The Mogul's Mile, a Mile and an Half English.

If one Seaman has 14s. the Month's Wages, What will the Wages of 3349 Seamen, for the same Time, come to?

$$\begin{array}{r} 3349 \\ 14 \\ \hline 13396 \\ 3349 \\ \hline 46886 \text{ Shillings.} \end{array}$$

The Answer is 46886 Shillings, which you may reduce into Pounds by the second Example in Reduction.

If there is a square pitched Field of Soldiers, containing 148 Men in Rank, and 148 Men in File, how many Men are there?

$$\begin{array}{r} 148 \\ 148 \\ \hline 1184 \\ 592 \\ 148 \\ \hline \end{array}$$

Answer 21904 Soldiers.

If an Orchard contains 10 Squares, and every Square 10 Trees, and every Tree 10 Branches, and every Branch 10 Apples, How many Apples are there in the Orchard? I answer Ten Thousand, viz.

The Number of Squares	- - -	10
The Trees in one Square	- - -	10
The Trees in all	- - -	100
The Branches in a Tree	- - -	10
The Branches in all the Trees		1000
The Apples on a Branch	- - -	10
The Apples in the whole Orchard		10000

Multiplication of Money.

Multiplication of Money (what most should learn above any Thing) hath great Affinity with Addition of Money; the same Method being taken in carrying from one Denomination to the next, viz. from Farthings to Pence, from Pence to Shillings, and from Shillings to Pounds. And as in Addition, (and other Multiplications) you begin at the Right-Hand, and proceed towards the Left; so here you begin at the least Denomination, which is also at the Right-Hand.

This Method of Accompting is the most easy and expeditious of all others, for smaller Quantities; and therefore extremely necessary in making Bills of Parcels, &c. And is, beyond all Contradiction, as sure and certain as any Way whatsoever.

The general Rule

is always to multiply the Price by the Quantity.

The first Step is, for Quantities from 2 to 12; and this done by one Multiplier; as in the Examples following.

Example 1. *What must I give for six Pieces of Cloth, if a Piece cost 7l. 12s. 6d.*

l.	s.	d.
7	12	6

Multiply the Price by 6

And the Product is the Answer, viz. £. 45 15 0

Here I say 6 Times 6 is 36 Pence, which is just 3s. I set down 0 in the Place of Pence, and carry 3s. to the Place of Shillings, (exactly the same as in Addition of Money;) then 6 Times 12 is 72, and 3 is 75s. or 3l. 15s. wherefore I set down 15 in the Place of Shillings, and carry 3 to the Pounds; then 6 Times 7 is 42, and 3 is 45l. So the whole amount of the 6 Pieces of Cloth, at 7l. 12s. 6d. per Cloth, is 45l. 15s. as in the Work, which is very concise.

Example 2. *What is the Value of 9 Yards of Silk, at 13s. 4d. per Yard?*

s.	d.
13	4

Multiply the Price by 9

Answer £. 6 0 0

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In this Example I say, 9 Times 4 is 36*d.* or 3*s.* I set down 0, and carry 3; then 9 Times 3 is 27. and 3 makes 30; I set down 0, and carry 3, (as in Multiplication of simple Numbers;) then 9 Times 1 is 9, and 3 is 12; which being the Tens of Shillings, consequently they are Angels, which being halved, make just 6*l.* and so much is the Value of 9 Yards, or any Thing at that Price, viz. 13*s.* 4*d.*

Example 3. *What comes 12 Gallons of Wine to, at 5*s.* 4*d.* per Gallon?*

Here I say 12 Times 4 is 48, 0 and carry 4; then 12 Times 5 is 60, and 4 is 64*s.* or 3*l.* 4*s.*

£. 3 4 0

The next Degree or Step of Advance in this Way of Reckoning, is of Quantities exceeding 12, even to 12 Times 12, or 144; all which, as far as 144, are found in that excellent Table the Table of Multiplication; which is a ready Help to all Purposes of Reckoning, and particularly in this Way; and that you may proceed with Dexterity, you must be very perfect in the said Table, that you may be immediately apprehensive what component Parts hit your Quantity proposed, or pretty near it; (for any Quantity below 12 needs no Recollection at all, as in the two Examples foregoing) and then work accordingly; as 15 Yards at, &c. I readily know that 3 and 5, or 5 and 3, are to be my Multipliers. If to 21, then 3 and 7, or 7 and 3, as above. If to 30, then 5 and 6, also 3 and 10, or 10 and 3. If to 45, 48, 56, 66, 72, 96, &c. then 5 and 9, 6 and 8, 7 and 8, 6 and 11, 6 and 12, &c. are to be Multipliers, and exactly hit their several Quantities of which they are component Parts; and Examples of this Kind have two Multiplications for their Solution.

When the Quantity proposed is a Number irregular, or such a Number, that no two Numbers in the Table can be found to answer it, then we must multiply by two such Numbers as come pretty near it, as is said above, and, for the Number wanting to make up the Number or Quantity proposed, multiply the given Price by the Number that is wanting, which will make three Products, by three Multiplications.

Applications ; which last Product must be added to the foregoing Products resulting from two Multiplications, and the Total will be the Answer.

And first, I shall shew Examples of the second Step, viz. of regular Quantities that exceed 12, and are precisely answered at two Multiplications, such as mentioned above, viz.

What comes 15 Yards of Muslin to, at 3s. 5d. per Yard?

s. d.

3 5
3 and 5

10 3

5

2 11 3

Here 3 Times 5 is 15d. or 1s. 3d. 3 and carry 1s; then 3 Times 3 is 9, and 1 is 10s. so the first Product is 10s. 3d. which I multiply by 5, saying, 5 Times 3 is 15d. or 1s. 3d. 3 and carry 1; then 5 Times 10 is 50, and 1 is 51s. or 2l. 11s. So the whole Amount of 15 Yards, at 3s. 5d. per Yard, is 2l. 11s. 3d. And demonstrable thus, viz. If 10s. 3d. be the Value of 3 Times 3s. 5d. then 5 Times the Value of 10s. 3d. must of Necessity be 15 Times the Value of 3s. 5d. because 5 Times 3 is 15 : And its Truth may be proved by Addition and Multiplication, thus : Set down 3s. 5d. 3 Times in Additional Order, and put three Lines together, and the Total of them multiply by 5, as before, and the Answer will be the same. Or set down 17s. 1d. (the Product of 3s. 5d. multiplied by 5) 3 Times also, and add them together, and the Total will be exactly the same with the Result by Multiplication, as in the following Specimen of the Work.

(1)

s. d.

3 5

3 5

3 5

10 3

5

2 11 3

(2)

s. d.

3 5

5

17 1

(3)

s. d.

17 1

17 1

17 1

2 11 3

Here the first of these two Proofs is worked by Addition and Multiplication, and the second by Multiplication and Addition. Also,

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By this we see, that in all Examples under this Head, we are to find two Numbers (for Multipliers) in the Table; which multiplied together, make the Quantity proposed; and then we are to multiply the Price by one of the Numbers, (it matters not by which first) and then that Product is to be multiplied by the other Number, and the second or last Product will be the Answer.

Example. *What is the Value of 21 Gallons of Brandy, at 7s. 9d. per Gallon?*

$$\begin{array}{r}
 \text{s. d.} \\
 7 \quad 9 \\
 \quad 7 \text{ and } 3 \\
 \hline
 2 \quad 14 \quad 3 \\
 \quad \quad 3 \\
 \hline
 8 \quad 02 \quad 9 \\
 \hline
 \end{array}$$

In this Example I say, 7 Times 9 is 63d. or 5s. 3d. I set down 3 and carry 5; then 7 Times 7 is 49, and 5 is 54s. or 2l. 14s. So the first Product is 2l. 14s. 3d. which I multiply by 3, and that produces the last Product or Answer, viz. 8l. 2s. 9d.

More Examples.

Example. *What comes 30 Ells of Holland to, at 3s. 7d. per Ell.*

$$\begin{array}{r}
 \text{s. d.} \\
 3 \quad 7 \\
 \quad 10 \text{ and } 3 \\
 \hline
 1 \quad 15 \quad 10 \\
 \quad \quad 3 \\
 \hline
 \text{Answer } 5 \quad 07 \quad 06 \\
 \hline
 \end{array}$$

Example. *45 Pounds of raw Silk, at 15s. 6d. per lb.*

$$\begin{array}{r}
 \text{s. d.} \\
 15 \quad 6 \\
 \quad 5 \text{ and } 9 \\
 \hline
 3 \quad 17 \quad 6 \\
 \quad \quad 9 \\
 \hline
 \text{Answer } 34 \quad 17 \quad 6 \\
 \hline
 \end{array}$$

Example. *56 Bushels of Wheat, at 4s. 9d. per Bushel.*

$$\begin{array}{r}
 \text{s. d.} \\
 4 \quad 9 \\
 \quad 7 \text{ and } 8 \\
 \hline
 1 \quad 13 \quad 3 \\
 \quad \quad 8 \\
 \hline
 \text{Answer } 3 \quad 6 \quad 0 \\
 \hline
 \end{array}$$

In the first Product of this Example, I say, the Half of 7 is 3 and an Half, or 3l. 10s. And in the last, the Half of 15 is 7 and an Half, or 7l. 10s. &c.

Example.

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Example. 72 Broad Pieces
at 3s. 6d. each.

s.	d.
23	6
	12 and 6

14	2	0
		6

Answer 84 12 0

Example. 108 Pounds of
Indigo Labore at 7s. 8d. per
Pound.

s.	d.
7	8
	9 and 12

3	9	0
		12

Answer 14 8 0

Example. 28 Angels is 14. &c.
Example. 96 C. of Currants at

l.	s.	d.
2	13	6 the C.
		8 and 12

21	8	0
		12

Answer 256 16 0

The next Gradation of Advance is of Quantities irregular, or of Numbers that are not to be answered precisely at two Multiplications; In this Case there ariseth no Increase of Difficulty, but it is as easy as the Examples foregoing; only here you will have an Addition of one Line more, occasioned by bringing down the Price of one to be added to the last Product; or else a Line more made by multiplying the Price by what is defective or wanting in the Number by two Multiplications, to make up the proposed Quantity compleat; as it may be of 2, 3, 4, 5, &c. as by the subsequent Examples may be seen and understood.

Example. What is the Product of 21. 13s. 6d. multiplied by 39?

Here I find that 6 multiplied by 6 makes 36; which is within 3 of the Quantity proposed; wherefore I multiply by 6, and that Product again by the other 6; the last Product is 96l. 6s. which is the Value of 36; but we want to know the Value of 39; wherefore I multiply the Price of one

l.	s.	d.
2	13	6
		6 and 6
10	01	0
		6
96	06	0
	8	00 6
104	06	6

Answer.

viz.

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viz. 2l. 13s. 6d. by 3 the Defect or what is wanting make up 36 to 39, saying, 3 Times 6 is 18d. &c. And find that 3 Times 2l. 13s. 6d. is 8l. 0s. 6d. which added 96l. 6s. the Total gives 104l. 6s. 6d. the complete Value 39; for 36 and 3 make 39. See the Work above.

Example. *What comes 79 C. of Cheese to, at 28s. per C*

l. s. d. 0 28 0 9 16 0 11 107 16 0 2 16 0 110 12 0	In this Example I say, 7 Times is 0; then 7 Times 8 is 56, 6 and carry 5; and 7 Times 2 is 14, and is 19; the Half of which is 9 and Half, or 9l. 10s. So the first Product is 9l. 16s. which multiplied by 7 produces 107l. 16s. or the Value 77; then for 2 wanting, I multiply the Price by it, and that gives 2l. 16s. which added to 107l. 16s. makes the whole Value 110l. 12s. as in the Work. Or, as there are no Pence
---	--

the Price, you may multiply 28s. by 79, without bringing it into Pounds, as you work it, but omit it to the last, and then cut off or separate the last Figure or Cypher of the Product towards the Right Hand, and halve those towards the Left, which will be Pounds, and the Figure cut off Shillings, as in this Example.

The Half of 2 is 1, and the Half of 2 is 1; and the Half of 110, which 1 joined to the 2 severed from 221, makes 12; for the Answer 110l. 12s. as before. This will be sufficiently explained in Division.

Example. 112 Pounds of Sugar, at 5 d. $\frac{1}{2}$ per lb, Set down thus:

d. 5 $\frac{1}{2}$ per Pound. 10 and 10 4 07 10 2 05 10 05 06 2 11 04	the Product of 5d $\frac{1}{2}$ by 12 defective. the Answer.
--	---

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Here, after I have multiplied by 10 and 10, the Parts of 10, there wants 12; wherefore I multiplied $5d. \frac{1}{2}$, by 12, and it gives $5s. 6d.$ for 12lb. at $5d. \frac{1}{2}$, which added to $2l.$ 10s. the Value of 100, makes $2l. 11s. 4d.$ the true Value of 112lb. at $5d. \frac{1}{2}$ per Pound.

Example. 94 Stone of Beef at 22d. or 1s. 10d. per Stone.

$\begin{array}{r} s. \quad d. \\ 1 \quad 10 \\ 10 \text{ and } 9 \\ \hline 18 \quad 4 \\ \quad 9 \\ \hline 05 \quad 0 \\ 7 \quad 4 \\ \hline 12 \quad 4 \end{array}$

Here, what is wanting, after the two Multiplications is 4; wherefore I multiply 1s. 10d. (the Price) by 4, which produces 7s. 4d. to be added, &c.

Answer.

Example. 37 C. and an half of Raisins, at 25s. 6d. per C.

$\begin{array}{r} s. \quad d. \\ 25 \quad 6 \\ 9 \text{ and } 10 \\ \hline 09 \quad 6 \\ 221 \quad 10 \\ \hline 15 \quad 0 \\ 18 \quad 6 \\ 12 \quad 9 \end{array}$

After I have multiplied by 9 and 10, I multiply the Price 25s. 6d. by the Quantity wanting, and it produces 8l. 18s. 6d. then for the Half C. I take Half of the Price, which is 12s. 9d. then collect the three Lines, the Total of which is 124l. 6s. 3d. for the Answer.

Set 06 3 Answer.

Note, From the last Example may be observed, That there is no Need of being too sollicitous to come so very near by two Multiplications; for there 7 is wanting to make the true Quantity; nay, if the two Multiplications be not by 10 or 12, it is near enough; for it is as easy to multiply the Price by 10 or 12, as by 2 or 3, and the Addition is the same.

Example. Once more: What comes 110 C. $\frac{3}{4}$ of Hops to 10s. 6d. per C.

H

l. s. d.

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l.	s.	d.
4	10	06
	10	and 10
45	05	00
	10	
452	10	00
45	05	00
2	05	03
1	02	07½
501	02	10½

Answer.

After I have multiplied by 10 and 10, which makes 100; I multiply the Price 4*l.* 10*s.* 6*d.* by 10 that is wanting, which gives the same with the first Product, *viz.* 45*l.* 5*s.* which stands under the Product by 100; and for the ¾ of a C. I take ¾ of the Price, *viz.* first the Half, and the Half of that Half, that is 2*l.* 5*s.* 3*d.* and 1*l.* 2*s.* 7*d.* ½; which four Lines added together, make 501*l.* 2*s.* 10*d.* ½ for the Answer.

To prove Multiplication.

DIVIDE the Product by the Multiplicand, or Multiplier, and the Quotient will be one of them.

This you cannot do before you have learnt the next Rule, *viz.* DIVISION. For the present therefore take this Method, *viz.* As you multiplied the Multiplicand by the Multiplier, so contrarywise, multiply the Multiplier by the Multiplicand; and if the Products are alike, the Work is right; otherwise one of them is wrong, and must be gone over again till they do agree.

Example 1.

365 Days in a Year.	1460
24 Hours in a Day.	730
1460	8760
730	
8760 Answer.	

Here (reverfely) I fay, 5 Times 4 is 20; 0 and carry 2; 6 Times 4 is 24, and 2 is 26; 6 and carry 2; and 3 Times 4 is 12, and 2 is 14; fo that the whole Product is 1460. Then 5 Times 2 is 10; 0 and carry 1; 6 Times 2 is 12, and 1 is 13; 3 and carry 1; and 3 Times 2 is 6, and 1 is 7, which makes 730. Which Product added together make 8760, the Hours in a Year, as above, without taking in the odd 6 Hours, which the Year doth confift of more than 365 Days.

Example

Example 2. 56 Gallons of Spirits, at 3s. 2d. per Gallon.

s. d.
 3 2
 7 and 8.
 1 02 2
 8
 17 4 Answer.

I say here, twice 7 is 14; 2 and carry 1s. and 3 Times 7 is 21, and 1 is 22s. or 1l. 2s. Again, twice 8 is 16d. 4 and carry 1s. and twice 8 is 16, and 1 is 17s. 17 and carry 0; and once 8 is 8l. Thus both these Examples are the same in Consequence, as if you proceeded in the common and regular Method of Multiplication, and shews the Truth of the Operation.

The next Rule in Order, of Course, is DIVISION.

DIVISION

TELLS us how often one Number or Sum is contained in another.

As great Names are brought into small, by Multiplication, as Pounds into Shillings, Pence, or Farthings, &c. so by Division small Names are turned into great, as Farthings into Pence, Shillings, or Pounds, &c.

Observe, that the Remainder is ever of the same Name with the Dividend, and is always less than the Divisor; for if it be more, or equal to the Divisor, the Work is wrong.

In Division (as in Multiplication) there are three Terms to be kept in the Memory, namely, the *Dividend*, the *Divisor*, and the *Quotient*, which will plainly appear by the following Question.

Example. Let 576l. be divided among 4 Men. The two Numbers are placed thus:

Divisor, Dividend, Quotient.

4) 576 (

The Number 576 is called the Dividend, the Figure 4, before it is called the Divisor; and those Figures that stand in the last crooked Line, are called the Quotient.

Now, to divide the aforementioned Sum 576l. among 4 Men, set the Sum down thus, 4) 576 (and work it with the Pen, according to the following Method.

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Saying; How often can I have 4 in 5; but 1 Time; therefore I set the Figure 1 in the crooked Line called the Quotient, and say once 4 is 4, setting the 4 under the 5, and subtracting it from it, saying, 4 from 5 and there remains 1.

$$\begin{array}{r} 4) 576 \text{ (1)} \\ \underline{4} \\ 1 \end{array}$$

Next, I make a Dot under the Figure 7, which is to shew I have taken it down, and set the 7 next to the 1: Then I ask how oft I can have the Divisor 4 in 17, which I find will be four Times; so I set the Figure 4 in the Quotient, and say, 4 Times 4 is 16, which I set under the 17, and subtract it from it, and there remains 1, as in the Margin.

$$\begin{array}{r} 4) 57.6 \text{ (144)} \\ \underline{4} \\ 17 \\ \underline{16} \\ 16 \\ \underline{16} \\ 0 \end{array}$$

Lastly, I make a Dot at the third Figure of the Dividend, which is 6, and take it down, and set it by the 1; and it makes 16: Then I ask, how many Times I can have 4 (the Divisor) in 16, and find 4 Times: I put 4 in the Quotient, and multiply the Divisor 4 by the 4 I place in the Quotient, which makes 16, and set it under 16, and subtracting, find 0 remains in the Margin.

So that 576^l. divided among four Men, each Man must have 144^l.

The Proof is by multiplying the Divisor 4 in the Quotient 144, and the Product will be 576, thus:

$$\begin{array}{r} 144 \\ \underline{4} \\ \text{Proof } 576 \text{ equal to the Dividend.} \end{array}$$

Divide 32956 by 7,

Set it down thus: 7) 32956 (

And ask, how oft can I have 7 in 32? I can have 4 Times, therefore I set 4 in the Quotient, and say, 4 Times 7 is 28, take 28 out of 32, and there remains 4, which set under 8, as in the Margin.

Ne

Next, I dot at 9 in the Dividend, and take it down and set it by the Remainder of the Subtraction, and it makes 49, as in the Margin; then I say, How oft can I have 7 the Divisor in 49 the new Dividual? And it being 7 Times, I set 7 in the Quotient, and multiply the Divisor by that 7, which makes 49, which 49 I set under the other, and subtract as in the Margin, and there remains 0.

$$\begin{array}{r} 7) 3295.6. (4708. \\ 28 \\ \hline 49 \\ 49 \\ \hline 56 \\ 56 \\ \hline 0 \\ \hline \end{array}$$

Next, I make a Dot at the Figure 5 and take it down and set it by the 0, in the Remainder of the Subtraction, and say, How oft can I have 7 out of 5? Which because I cannot have at all, I set 0 in the Quotient, as in the Margin.

Lastly, I make a Dot in the last Figure of the Dividend, which is 6, and bring that down, and set it by the 5, and it makes 56 for the new Dividual, and say, How many Times can I have 7 the Divisor out of 56 the Dividual, and find it 8 Times; therefore I multiply 7 my Divisor, by 8 in the Quotient; and it being 56, I set it under the Dividual, and subtract, and find 0 remains, as in the Margin. Thus the Number 32956 is divided into 7 Parts, 1 Part being 4708.

Divide 879601. among 20 Men.

Set the Sum thus: $2|0) 8796|0 ($

And because there is a 0 in the last Place of the Divisor, I cut off one Place in the Dividend, and work without it.

Next, I say, How oft can I have the Divisor 2 in the first Figure of the Dividend 8? It being 4 Times, I set 4 in the Quotient, and multiply 2 the Divisor by it, and being 8, I set it under 8, and subtract 8 from 8, and 0 remains, and then proceed as before. The same is to be observed if you divide by 10, 100, &c. or 30, 40, 200, &c.

$$\begin{array}{r} 2|0) 87.9.6. |0 (4398 \\ 8 \\ \hline 7 \\ 6 \\ \hline 19 \\ 18 \\ \hline 16 \\ 16 \\ \hline 0 \\ \hline \end{array}$$

Let 207361. be divided among 12 Men.

I set the Sum thus: 12) 20736 (

There being two Figures, I make a Dot at 0, the second Place of the Dividend, and count it 20; then I ask, How oft I can have the Divisor 12 out of the Dividend 20? I find but once; therefore I set 1 in the Quotient, and multiply 12 the Divisor by 1, and set it down under 20, and draw a Line and subtract, and there remains 8; I set it down under it, as it will stand in the Margin.

$$\begin{array}{r}
 12) 207.3.6. (1728 \\
 \underline{12} \\
 87 \\
 \underline{84} \\
 33 \\
 \underline{24} \\
 96 \\
 \underline{96} \\
 0
 \end{array}$$

Next, I make a Dot at the third Figure of the Dividend, which is 7, and bring it down, and set it on the Right Hand of the Figure 8, and it makes 87 for a new Dividual; then I ask, how oft I can have 12 the Divisor out of 87 the Dividual? Which being 7 Times, I set 7 in the Quotient, and multiply 12 the Divisor by it, and it being 84, I set it under the 87, and drawing a Line, I subtract 84 from 87, and there remains 3, and the Work will stand as in the the Margin.

Next, I make a Dot at the fourth Figure of the Dividend, which is 3, and bring it down, and set it on the right Hand of 3, the Remainder of the last Subtraction, and it makes 33 for a new Dividual: Then I ask, how oft can I have 12 the Divisor out of 33? And it being twice, I set a Figure of 2 in the Quotient, and multiplying 12, the Divisor, by 2, it makes 24, which I set under 33, and draw a Line; and having subtracted it from 33, there remains 9, and the Work will stand as in the Margin.

Next, I make a Dot at 6, the last Figure of the Dividend, and bring it down and set it at the Right-Hand of the 9. and it makes 96 for a new Dividual: Then I ask, how oft I can have the Divisor 12 out of the new Di-

dual

vidual 96, and it being 8 Times, I set 8 in the Quotient, and multiply the Divisor 12 by the Figure 8, and it makes 96, which I set under the Dividual 96, and drawing a Line, I subtract, and there remains 0, and the Work will stand as in the Margin.

So that if 20736 Pounds are to be divided between 12 Men, each Man will have 1728.

Divide 8060 Pounds of Tobacco equally among 8 Men.

Here I say, the 8's in 8 once, which I put in the Quotient; then the 8's in 0, 0 Times, which I likewise put in the Quotient; then the 8's in 6, 0 Times again, which is also placed in the Quotient, and there remains 6, to which I bring down 0, the last of the Dividend, and it makes 60: *Lastly*, the 8's in 60, 7 Times, and 7 Times 8 is 56, from 60, and there remains 4: So the Quotient shews, that each Person must have 1007 Pounds of Tobacco for his Share in the Dividend 8060, and there remains 4 Pounds over and above, which makes half a Pound more due to each Man, because 4 the Remainder is Half of 8 the Divisor. And so the Work is done, the Quotient giving to each Man 1007 Pounds and Half for his equal Share.

A quicker Way for Dispatch, when the Divisor is a single Figure, will be to work as in the Examples following:

	(1)	(2)	(3)
	4) 78906	5) 34567	6) 29702
Quotient	19726 (2)	6913 (2)	4950 (2)
	4	5	6
Proof	78906	34567	29702

In the first of these Examples I say, 4's in 7 once, and there remains 3; which makes 8 the next Figure in the Dividend 38; then the 4's in 38, 9 Times; 9 Times 4 is 36, from 38, and there remains 2, which makes 9 the next Figure

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figure in the Dividend 29; then the 4's in 29, 7 Times; 7 Times 4 is 28, from 29, and there remains 1, which makes 0, the next Figure of the Dividend 10, and the 4's in 10 twice, twice 4 is 8, from 10, and there remains 2, which makes 6 the last of the Dividend 26. *Lastly*, The 4's in 26, 6 Times, and 6 Times 4 is 24, from 26, and there remains 2. And so for the other two Examples. And for Proof of the Work, (or any other Example) multiply the Quotient by the Divisor, and take in the Remainder in the first Place, or Place of Units; and if the Product be the same with the Dividend, the Work is right: For I say, 4 Times 6 is 24, and 2 the Remainder makes 26, 6 and go 2, &c.

More Examples by a single Figure.

	3) 54321	7) 279060	9) 234567
Quotient	18107 (0) 3	39865 (5) 7	26063 (0) 9
Proof	<u>54321</u>	<u>279060</u>	<u>234567</u>

This is the shortest Way of Division that can be by a single Figure.

As it is necessary for Expedition to multiply by 11 and 12, as by a single Figure, to have the Product in one Line, so it is also to divide, as in these Examples, *viz.*

	11) 72646206	12) 76677240
Quotient	6604200 (6) 11	6389770 12
Proof	<u>72646206</u>	<u>76677240</u>
	11) 47627000	12) 42007400
Quotient	4329727 (3) 11	3500616 (8) 12
Proof	<u>47627000</u>	<u>42007400</u>

In the first of these Examples I say, the 11's in 72, answer 6 Times, &c. In the second I say, the 12's in 76, answer 6 Times, &c. In the third I say, the 11's in 47, 4 Times; 4 Times 11 is 44, from 47, and there rests 3, &c. In the fourth I say, the 12's in 42, 3 Times; 3 Times 12 is 36, from 42, and there remains 6, &c.

By being ready and dextrous in the Examples above, you may expeditiously divide by these Numbers, *viz.* 110, 120, 1100, or 1200, &c. for it is by cutting off, or separating the Cyphers from 11 and 12, (when these Numbers happen to be Divisors) and cutting off, or separating, the like Number of Figures or Cyphers from the Right Hand of the Dividend, and then divide the other Figures or Cyphers towards the Left Hand, by 11 or 12, as it shall happen; as in the Example following, *viz.*

Divide 34567 by 110, and 890123 by 120, and 98765 by 1100, and 678901 by 1200.

$$11|0) 3456|7$$

$$12|0) 89012|3$$

$$\text{Quotient } 314\frac{2}{11} \text{ or } 314\frac{2}{11}$$

$$7417\frac{8}{12} \text{ or } 7417\frac{2}{3}$$

$$11|00) 987|65$$

$$12|00) 6789|01$$

$$\text{Quotient } 89\frac{8}{11} \text{ or } 89\frac{8}{11}$$

$$\text{Quotient } 567\frac{9}{12} \text{ or } 567\frac{3}{4}$$

Whenever you divide by 10, 100, 1000, or 10000, &c. you have nothing more to do than to cut off, or to separate so many Figures or Cyphers of the Dividend towards the Right-Hand, as you have Cyphers in the Divisor, and those Figures towards the Left make your Quotient; and those you cut off towards the Right are the Remainder.

EXAMPLES.

Divide 123456789 by 10, 100, 1000, or 10000.

By 10 the Quotient is 12345678, and Remainder 9.

By 100 the Quotient is 1234567, and Remainder 89.

By 1000 the Quotient is 123456, and Remainder 789.

By 10000 the Quotient is 12345, and Remainder 6789.

When the Divisor consisteth of several Figures, then there ariseth a little more Difficulty in the Work; but if the following Directions are heedfully attended to, the seeming Difficulty is easily overcome; as in the succeeding Example, *viz.*

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Suppose I am to divide 78901 Pounds among 32 Parishes or suppose an Assessment of so much Money was laid on so many Parishes; What must each Parish pay, by an equal Proportion towards the raising such a Supply?

Divisor 32) 78901 (. Quotient.

The Example thus set out, I begin at the Left-hand seeking how often I can take 32 out of 78; or, more easily How many Times 3 is there in 7, and the Answer is two Times, which I place in the Quotient thus, 32) 78901 (2, and then, according to the general Rule of Working, I multiply the Divisor 32, by the 2 placed in the Quotient, saying, twice 2 is 4, and twice 3 is 6; so there is 64 to be taken out of 78, as it appears in the Margin.

$$\begin{array}{r} 32) 78901 (2 \\ 64 \\ \hline 14 \end{array}$$

Then I make a Point under 9, the third Figure of the Dividend, and bring it down to the Remainder 14, and then the Work appears as in the Margin.

$$\begin{array}{r} 32) 78901 (2 \\ 64 \\ \hline 149 \end{array}$$

Then I seek again, asking, how many Times 32 in 149, which is not readily to be answered; but how many Times 3, the first Figure in the Divisor, is there in 14, the two first Figures of the Dividual 149, and the Answer is 4 Times; wherefore, after placing 4 in the Quotient, I multiply (as directed in the general Rule) the Divisor 32 by the said 4, saying, 4 Times 2 is 8, placing it under 9 in the Dividual then 4 Times 3 is 12, and set it down under 14; so there is 128 to be taken out of 149, and then the Work appears as in the Margin.

$$\begin{array}{r} 32) 78901 (24 \\ 64 \\ \hline 149 \\ 128 \\ \hline 210 \end{array}$$

And after Subtraction there remains 21; then I make a Point under 0 in the Dividend, and bring it down to the Right of the Remainder 21, and then there is 210 for a new Dividual; then (as the general Rule directs) I seek again, saying, How many Times 32 the Divisor is there in 210 the Dividual? or easier, How many Times 3 in 21 (For observe well, that whenever you have a Place more in the Dividual than in the Divisor, then always seek how oft you can take the first Figure of the Divisor out of the two first of the Dividual) and the Answer is 7 Times; but

will not bear 7 Times, for 7 Times 32 is 224, and you cannot take 224 out of 210, or rather you cannot take 22 of 21; wherefore try in your Mind, before you set down the Answer, or Figure in the Quotient, whether it will go the Number of Times as is most easily suggested; as here, the Question or Demand is readily answered 7 Times, and many Times 3 may be taken in 21; but when you come to multiply the whole Divisor by the Times you place in the Quotient, you begin at the Right Hand and go towards the Left, carrying the Tens that arise to the next Place; which increases the Product so, that sometimes the Subtraction cannot be made, because the under Line is greater than the upper, or that which you should subtract from; wherefore first try in your Mind, as abovesaid, and since it will not bear 7 Times, try if it will go 6 Times, saying, 6 Times 2 is 12, 2 and carry 1, and 6 Times 3 is 18, and 1 is 19, and 19 may be taken out of 21; therefore set down 6 in the Quotient next to the 4, and multiply the Divisor by it, and the Work will stand thus:

Here the Divisor 32, multiplied by 6, (32) 78901 (2465
 gives 192 to be taken out of 210, and 64...
 (24) the Remainder is 18; to which, after a
 first made under it, I bring down the
 the last Figure in the Dividend, and
 then there is 181 for a new Dividual;
 then, according to the Rule, I seek
 again, (for you are to note, That the
 abovesaid general Rule for Working
 must be as often repeated as you bring
 down a Figure or Cypher from the Di-
 vidend, to make a new Dividual; and
 so, That for every Figure or Cypher
 brought down, there must likewise be
 a Figure or Cypher placed in the Quotient;) how many
 Times 32 the Divisor, may be taken out of 181 the Divi-
 dual, or how many Times 3 in 18, and the ready Answer
 is 6 Times: but, on Trial, I find it will not go 6 Times;
 wherefore I try a Time less by one, viz. 5 Times, and find
 it will bear it; and setting 5 in the Quotient next the 6, I
 multiply the Divisor 32 by it, and it produces 160, which
 subtracted from 181, the last Remainder is 21, and the
 Quotient or Answer is 2465, and shews, that 32 is contained
 in 78901, 2465 Times, and 21 over, as per Work.

Again,

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Again. Admit a Nobleman hath 30000*l.* per Annum
What is his daily Income?

If you divide 30000 by 365 (the Days in a Year) the
Quotient will be the Answer. Set it down for working
thus,

$$365) 30000 ($$

First, seek how many Times 365 can be taken in 30000
(an equal Number of Places with the Divisor) answer
Times; wherefore I go a Place further to the Right-Hand
in the Dividend, (for 0 must never begin the Quotient) and
make a Point under it, *viz.* under the last 0 but one, (as
may be seen in the Example) and there being a Place more
in this pointed out Dividend than in the Divisor, I seek how
oft the first Figure of the Divisor, *viz.* 3, is contained in the
two first Figures or Places of the Dividend, *viz.* 30, and
the Answer is 10 Times; but you are never to take above
9 Times at once, in any of these Examples of Division
wherefore try in your Mind whether it will bear 9 Times
before you set it down in the Quotient, (as was said before
saying to yourself or in your Mind, 9 Times 5 is 45, 5 and
go 4; and 9 Times 6 is 54, and 4 is 58, 8 and go 5, and
9 Times 3 is 27, and 5 is 32; now 32 cannot be taken
out of 30, wherefore take a Time less
by a Unit or One, *viz.* 8 Times, and
finding it will go 8 Times, set 8 in the
Quotient, and then say, 8 Times 5 is
40, 0 and carry 4; and 8 Times 6 is
48, and 4 is 52, 2 and carry 5; and
8 Times 3 is 24, and 5 is 29; and then there is 2920 to
be taken from 3000, and there remains 80. Then to the
Remainder 80 I bring down 0, the last of the Dividend
and then there is 800 for a new Dividend; then you must
try how oft you can take 365 out of the said Dividend 800
and the Number of Places being equal both in Divisor and
Dividend, to wit, 3, ask how oft 3 in 8, Answer twice; I
put 2 in the Quotient, and say twice 5 is 10, 0 and carry
1; and twice 6 is 12, and 1 is 13, 3 and carry 1; and
twice 3 is 6, and 1 is 7; so there is 730 to be deducted
from 800, and the Remainder is 70, as in the whole Work
may be seen.

$$\begin{array}{r} 365) 30000 \\ \underline{2920} \\ 80 \end{array}$$

Thus by the Work, the Nobleman hath 82 Pounds per
Diem, and 70 Pounds over; which, if multiplied by 20

the Shillings in a Pound) would produce 1400 Shillings; which, if divided by said Divisor 365, there would come out 3s. a Day more, and there will be a Remainder of 305, which, multiplied by 12, (the Pence in a Shilling) produces 3660, which, divided still by 365, gives 10d. a Day more, So that 300000. a Year is 82l. 3s. 10d. a Day.

$$\begin{array}{r} 365) 30000 (82 \\ \underline{2920} \\ 800 \\ \underline{730} \\ 70 \end{array}$$

Divide 46242 Gallons of Canary, by 252 (the Gallons in
Jun.) Thus set down.

In this Example, after Enquiry, I find that it will not go twice, therefore I set down 1 in the Quotient, and place 252 under 462 of the Dividend, and after Subtraction, the Remainder is 210, to which I bring down 4 from the Dividend, and the Dividual is 2104; and then seeking again, find it will bear 8 Times, which placed in the Quotient, and the Divisor 252 multiplied by it, the Product is 2016 to be subtracted from 2104, which being done, the Remainder is 88; to which 2 (the last Figure of the Dividend) being brought down, there is 882 for the last Dividual; and then seeking again, I find it will go 3 Times, and the Product of the Divisor, multiplied by 3, is 756, which subtracted from 882, there remains 126 for the last or true Remainder. So that by this Division I find there are 183 Tuns in 46242 Gallons, and 126 Gallons remaining, or over and above; which being Half of 252 the Divisor, the Remainder is therefore Half a Tun more.

$$\begin{array}{r} 252 \overline{) 46242} (183 \\ \underline{252} \\ 2104 \\ \underline{2016} \\ 882 \\ \underline{756} \\ 126 \end{array}$$

When you have a Cypher or Cyhers in the Divisor in the first, second, or third Place, &c. separate such Cypher or Cyphers, with a Dash of the Pen, from the rest of the Divisor : and also cut off as many Figures or Cyphers from the Right of the Dividend, as you cut off Cyphers from the Divisor, and divide the remaining Figures towards the Left-Hand by the remaining significant Figures of the Divisor.

Suppose the King's Revenue came to 250000l. by the Year,
How much comes it to by the Week?

Divide

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Divide by 52, the Weeks in a Year.

Here because 5, the first Figure of the Divisor 52, bigger than the first Figure of the Dividend 2, therefore take 3 Places for the first Dividual, dotting at 0, which I count 250, saying, How oft can I have 52 out of 250? or, How oft can I have 5, the first Figure of the Divisor, out of 25 the two first Figures of the Dividend? which though I can have it just 5 Times, yet because I cannot have 5 Times 2 out of 0, the remaining Figure, I take it 4 Times, and set 4 in the Quotient, and multiply 52 the Divisor by that 4, which makes 208, which I set under the 250, and draw a Line and subtract, and there remains 42 and the Work will stand as in the Margin.

$$\begin{array}{r} 52) 250000 \quad (4 \\ \underline{208} \\ 42 \end{array}$$

Next, I dot at the fourth Place of the Dividend, which is a Cypher also, and bring that down and set it at the Right Side of the 42, the Remainder after Subtraction, and it makes 420 for a new Dividual; then I ask, How oft I can have the Divisor 52 out of the Dividual 420, or how oft I can have 5, the first Figure of 52, out of 42, the two first Figures of the Dividual, and find it will go 8 Times; therefore I set 8 in the Quotient, and multiply 52, the Divisor, by that 8, and it makes 416, which I set under the 420, and draw a Line and subtract and there remains 4; and the Work stands as in the Margin.

$$\begin{array}{r} 52) 250000 \quad (48 \\ \underline{208} \\ 420 \\ \underline{416} \\ 4 \end{array}$$

Next, I make a Dot at the 5th Place towards the Right Hand of the Dividend, and take down the Cypher, and set it at the Right Hand of the 4 that remained after Subtraction, and it makes 40, but because I cannot have the Divisor 52 out of the new Dividual 40, I set a Cypher in the Quotient, and it will stand as in the Margin.

$$\begin{array}{r} 52) 250000 \quad (480 \\ \underline{208} \dots \\ 420 \\ \underline{416} \\ 40 \end{array}$$

Next, I make a Dot at the last Place of the Dividend, and bring down the Cypher, and set it at the Right Hand of the 40 for a new Dividual, and it makes 400; then I ask, How oft can I have the Divisor 52 out of the Dividual 400? Or, how oft can I have 5 the first Figure of

Divisor 52 out of the two first Figures of the Dividual 40, and find it will go but 7 Times; therefore I set 7 in the Quotient, and multiply 52 the Divisor by 7, and it makes 364, which I set under the 400; and having drawn a Line I subtract, and there remains 36, as in the Margin.

$$\begin{array}{r} 52 \overline{) 250000} \quad (4807 \\ \underline{208} \dots \\ 420 \\ \underline{416} \\ 400 \\ \underline{364} \\ 36 \end{array}$$

So that if the King's Revenue for one Year comes to 250000*l.* it is by the Week 4807*l.* Remainder 36 is so much of a Pound, or 20*s.* as it wants of 52; or if 20*s.* is divided into 52 Parts, it is 13 Shillings, 10 Pence, and Parts of a Penny.

In 42952 square Poles, or Perches of Land, how many Acres.

Now, because there are 16 Feet $\frac{1}{2}$ in a square Pole of Land both Ways, and 160 square Poles make an Acre, and because there is a 0 or Cypher on the Right-Hand, set the Sum down thus:

$$160 \overline{) 42952} \quad ($$

Here, because I have a Cypher in the first Place of my Division towards the Right, I cut it off, and work without it; and I also cut off a Figure in the first Place of the Dividend to the Right Hand, and the Sum will stand thus:

$$16 \overline{) 0} 42952 \overline{) 2} \quad (2$$

Then I make a Dot at the second Place of my Dividend, and ask, How oft can I have 16 my Divisor in 42 the Dividual, and find it will go 2 Times; I set a 2 in the Quotient, and multiply 16 the Divisor by 2, which I set in the Quotient, and it makes 32; therefore I set 32 under 42, and draw a Line and subtract, and there remains 10, as in the Margin.

$$\begin{array}{r} 16 \overline{) 0} 42952 \overline{) 2} \quad (2 \\ \underline{32} \dots \\ 10 \end{array}$$

Then I make a Dot at the third Figure of the Dividend, which is 9, and bring it down and set it on the Right Hand of the 10, which remained after Subtraction, and it makes 109 a new Dividend; then I ask, How oft I can have 16 out of 109; and find it will go 6 Times, therefore I

$$\begin{array}{r} 16 \overline{) 0} 42952 \overline{) 2} \quad (26 \\ \underline{32} \dots \\ 109 \\ \underline{96} \\ 13 \end{array}$$

set

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set 6 in the Quotient, and multiply 16 the Divisor by 6 in the Quotient, and it makes 96, which I subtract from 109, and there remains 13, as in the Margin.

Then I make a Dot at 5, the Figure in the Dividend, and bring it down and set it at the Right-Hand of 13, and it makes 135 for a new Dividual; then I say, How often can I have the Divisor 16 out of the Dividual 135? And I find it will go 8 Times, therefore I set 8 in the Quotient, and multiply 16 the Divisor by 8, and it makes 128, which I set down under 135, draw a Line and subtract, and there remains 7, as in the Margin.

$$\begin{array}{r}
 16 \overline{) 429512} \quad (268 \\
 \underline{32 } \\
 109 \\
 \underline{96} \\
 135 \\
 \underline{128} \\
 7
 \end{array}$$

And the Answer is 268 Acres, and the Remainder is $\frac{7}{16}$ of an Acre, or 72 Poles.

If 7306242l. are to be equally levied upon 9034 Parishers how much must each pay?

Divide the Pounds by the Parishers, and the Quotient shews the Pounds each Parish is to contribute.

Set the Sum down thus, 9034) 7306242 (

Now, because the 9, the first Figure of the Divisor is more than 7, the first Figure of the Dividend, I must take a Place more of the Dividend for my Dividual, than the Number of the Figures in the Divisor, which is four Places, therefore I dot at 2, and say, How often can I have 9, the first Figure of the Divisor, out of 73, the two first Figures of the Dividend? Which I find to be eight Times; therefore I set down 8 in the Quotient, and multiply the Divisor by 8, and set down the Product, which is 72272, under the Dividend, and draw a Line and subtract 72272 from 73062, and there will remain 790, and the Work will stand as in the Margin.

$$\begin{array}{r}
 9034 \overline{) 7306242} \quad (8 \\
 \underline{72272} \\
 790
 \end{array}$$

Next I make a Dot at 4 in the Dividend, and bring it down and set it at the Right-Hand of 790, the Remainder after Subtraction, and it will make the Dividual 7904; then I ask,

$$\begin{array}{r}
 9034 \overline{) 7306242} \quad (8 \\
 \underline{72272} \\
 7904
 \end{array}$$

How

How oft can I have the first Figure of the Divisor 9 out of the first Figure of the Dividual, which is but 7, and because I cannot have it once, the Divisor 6034 being more than the Dividual 7904, I set a Cypher in the Quotient, and the Work will stand as in the Margin.

Next, I make a Dot at 2, the last Figure of the Dividend, and set it at the Right-Hand of 7904 for a new Dividual, and ask, How oft I can have 9, the first Figure of the Divisor, out of 79, the two first Figures of the Dividual 79042, and I find it will go 8 Times, therefore I set 8 in the Quotient, and multiply the Divisor 9034 by 8, and the Product is 72272, which I set under the Dividual, and draw a Line and subtract, and there remains 6770, and the Work will stand as in the Margin.

$$\begin{array}{r}
 9034) 7306242 (808 \\
 \underline{72272} \\
 79042 \\
 \underline{72272} \\
 6770
 \end{array}$$

Now, if 7306242*l.* are to be equally levied upon 9034 Parishes, as above, then each Parish is to contribute 808*l.* but yet there remains the 6770*l.* to be divided, which you must first reduce into Shillings, and they make 135400; which divide by 9034, and the Quotient will be 14, and then 24 Shillings will remain; which being reduced into Pence, the Product will be 107088, which being divided by 9034, the Parishes, the Quotient will be 11, and 7714 Pence will remain; which being reduced into Farthings, the Product will be 30856; this divided by 9034, the Quotient will be 3, and the Remainder will be 3754 Parts of 9034 of a Farthing. So that the whole Sum for each Parish to pay is 808*l.* 14*s.* 11*d.* $\frac{3}{4}$, and $\frac{3754}{9034}$ Parts of a Farthing.

Divide 42952 square Poles of Land by 160 the square Poles in an Acre of Land.

Here the Cypher is cut off from the Divisor, and 2 from the Dividend; then I ask, How oft 16 in 42? Answer, twice; then the 16's in 109, Answer, six Times; then the 16's in 135, Answer 8 Times. So there are 258 Acres, and 7 remains; that is, 258 Acres $\frac{7}{160}$, or almost Half an Acre.

$$\begin{array}{r}
 16|0) 4295|2 (268 \\
 \underline{32} \\
 109 \\
 \underline{96} \\
 135 \\
 \underline{128} \\
 7
 \end{array}$$

Divide

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Divide 6274620 by 2700.
 27|00) 62746|20 (2323²⁵²⁰₂₇₀₀

$$\begin{array}{r}
 54 \dots \\
 \hline
 87 \\
 81 \\
 \hline
 64 \\
 54 \\
 \hline
 106 \\
 81 \\
 \hline
 25
 \end{array}$$

In this Example Cyphers are separated from the Divisor, and also Places from the Dividend and then 62746 is divided only by 27. See Work.

When the Divisor is 3, 4, 5, 6, or more Figures, there is a sure and easy Way of performing the Work truly, making a Table of the Divisor; which may be done by Addition, or multiplying the Divisor by 2, 3, 4, &c.

Admit you are to divide 987654321 by 123456

$$\begin{array}{r}
 123456) 987654321 \text{ (8000)} \\
 987648 \dots
 \end{array}$$

6321

Here having noted the Number of Figures in the Divisor, which here is six, I fix a Point under the seventh Figure, or Place of the Dividend, &c.

$$1 \quad 123456$$

$$2 \quad 246912$$

$$3 \quad 370368$$

$$4 \quad 493824$$

$$5 \quad 617280$$

$$6 \quad 740736$$

$$7 \quad 854192$$

$$8 \quad 987648$$

$$9 \quad 1111104$$

This Table is made by doubling the first Line, which is 246912, which added to the first or uppermost Line gives the second Line 370368, which also added to the first Line makes 493824 for the fourth Line or Product; and so of the rest, remembering to add the subsequent Line or Product to the first or uppermost Line till you come to the last Line of 9 Times which is 1111104. The Truth of which may be proved by multiplying the first uppermost Line by 2, 3, 4, 5, &c. And if you commit an Error by Addition, it may be found out or corrected by Multiplication.

The Use of the said Table.

When you have pointed out your Number of Places in Dividend, cast your Eye on the Table, and at the first you may know how many Times you can take ; as in this Example, 7 Times is too little, and 9 Times too much ; wherefore I set down 8 in the Quotient, and then multiply and subtract, and the Remainder is 6 ; to which bring down 3, and put 0 in the Quotient ; then to the 6 bring down 2, and place another 0 in the Quotient ; to 632 I bring down 1, the last Figure of the Dividend ; but still it will not bear any Time or Times, wherefore I put another 0 in the Quotient ; and so the Work is done, and the Quotient is 8000, and the Remainder 6321 ; is the Work.

Thus having plainly, fully, and pertinently shewn, by the said Directions, the Method of working Division, I think unnecessary to give any more Examples in that Manner ; I shall leave some few Examples for Practice Sake, whose Quotients and Remainders are expressed, but the Operations omitted, to save Room, and for Trial of the Ingenuity of Practitioners.

100690042 divided by 987, the Quotient is 7498166, Remainder 200.

79679002742 divided by 4689, the Quotient is 298784, and the Remainder 4566.

969767002 divided by 976294, the Quotient is 8163, Remainder 279080.

56789012345 divided by 9876543, the Quotient is 5749, and Remainder 8775138.

6469747 divided by 4500, the Quotient is 16993, and Remainder 1249. And,

992420000 divided by 345000, the Quotient is 23456, and remains 0.

The Proof of Multiplication and Division.

THESE two Rules reciprocally prove each other ; for in proving Multiplication, if you divide the Product by the Multiplier, the Quotient will be like the Multiplier ; or if by the Multiplicand, the Quotient will be the same with the Multiplier.

Example.

Example.

$$\begin{array}{r}
 345 \\
 24 \\
 \hline
 1380 \\
 690 \\
 \hline
 24) 8280 \quad (345 \\
 720 \\
 \hline
 108 \\
 96 \\
 \hline
 120 \\
 120 \\
 \hline
 0 \\
 \hline
 \end{array}$$

Or thus,

$$\begin{array}{r}
 345) 8280 \quad (24 \\
 690 \\
 \hline
 1380 \\
 1380 \\
 \hline
 0 \\
 \hline
 \end{array}$$

To prove Division.

Division may be proved thus:

If there is any Remainder, first subtract it from the Dividend, and then if you divide the Dividend by the Quotient, the Quotient will be your former Divisor.

Example. Divide 8280 by 345.

Here the Working again is needless, it being above and shews the Truth of the Assertion, that Division may be proved by Division as aforesaid.

But the most usual Way of proving Division is by Multiplication, in this Manner, *viz.* Multiply the Quotient by the Divisor, and the Product will be equal to the Dividend as in the foregoing Example.

Note, That when there is any Remainder, such Remainder must be taken in or added to the Product.

$$\begin{array}{r}
 345 \text{ Quotient} \\
 24 \text{ Divisor.} \\
 \hline
 1380 \\
 690 \\
 \hline
 8280 \text{ Proof.} \\
 \hline
 \end{array}$$

As in Multiplication I gave some Examples of its Usefulness in Money, so likewise I shall give a few Examples

Division of Money; whereby may be seen how expeditiously some Things may be done, without having Recourse to Reduction, the Rule of Three, &c. viz.

Example. Divide 26l. 12s. 6d. equally among 5 Men. For Disposition of Working set it down as follows.

l. s. d.
5) 26 12 6

In the Working of this, I say, the 5's in 26, 5 Times; 5 Times 5 is 25, from 26 and there remains 1, or 1l. or 20s. which, with the 12s. in the Place of Shillings makes 32s. then the 5's in 32, 6 Times; 6 Times 5 is 30, from 32, and there remains 2s. or 24d. which with the 6d. in the Place of Pence, makes 30; then the 5's in 30, 6 Times; and so the Work is done; and the Answer is, that each Man must have 5l. 6s. 6d. for his equal Share in the said Division of 26l. 12s. 6d. amongst 5 Persons; and the Truth of it is proved by Multiplication of Money, sufficiently shewn in the Rule of Multiplication; as here, 5 Times 6 is 30, 6 and carry 2; and 5 Times 6 is 30, and 2 is 32, 12 and carry 1, and 5 Times 5 is 25, and 1 is 26, &c.

Example. Divide the Charges of a Country-Feast, amounting to 246l. 13s. 4d. equally amongst 12 Stewards, to know what each Steward must pay.

l. s. d.
12) 246 13 4

Answer 20 11 1 $\frac{4}{12}$

Here, I say, the 12's in 24, twice, and the 12's in 6, 0 Times, and there remains 6l. or 120s. and 13s. makes

133; then the 12's in 13 once, and the 12's in 13 once, and there remains 1s. or 12d. then 12 and 4 is 16; the 12's in 16 once, and 4 remains; so that each Steward must pay 20l. 11s. 4d. $\frac{4}{12}$, or four Twelfths of a Penny, something more than a Farthing; and this may be proved as that above.

When any Quantity is such a Number, that any two Digits of the Multiplication-Table, multiplied together, make the said Quantity or Number, then the Quotient may be very expeditiously found at two Divisions, and sooner than at one. Example: Divide 7872 by 32. In this Example, the Digits, component Parts, or Ratios, which, multiplied together,

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together, make the Divisor 32, are 4 and 8, or 8 and 4; for it matters not which of the Ratio's you divide by first; for both Divisions together give a true Answer and the same Quotient; as may be seen by the different Methods of the following Work.

$$\begin{array}{r} 4) 7872 \\ \hline \end{array}$$

$$\begin{array}{r} 8) 1968 \\ \hline \end{array}$$

246 Quotient.

$$\text{Or thus, } 8) 7872$$

$$\begin{array}{r} 4) 984 \\ \hline \end{array}$$

246 Quotient.

Here though the Operations are diverse, yet the Quotients are one and the same. Again divide 44184 by 56.

Example.

$$\begin{array}{r} 7) 44184 \\ \hline \end{array}$$

$$\begin{array}{r} 8) 6312 \\ \hline \end{array}$$

789 Quotient.

Here the Divisors are 7 and 8, or 8 and 7; for either, or both, will give the same Quotient.

And thus may above forty Examples be wrought by Numbers out of the Multiplication-Table, with great Dispatch and Expedition, as by 15, 18, 25, 35, 64, 72, 96, &c.

When it happens there is any Remainder in the first Division, or the last, or in both; to know the true Remainder as if you divided by the common Way, take this Method, *viz.* multiply the first Divisor by the last Remainder, and take in or add the first Remainder, if there be any, and the Product will be the true or same Remainder as if you divided by the long Way.

Example. Divide 4567 by 15.

Here I multiply 3, the first Divisor, by 2, the last Remainder, and take in 1, the first Remainder, and it makes 7 for the true Remainder, as may be proved at Leisure, by the other Way.

$$\begin{array}{r} 3) 4567 \\ \hline \end{array}$$

$$\begin{array}{r} 5) 15521 \\ \hline \end{array}$$

$$\begin{array}{r} 3042 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ \hline \end{array}$$

The

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The same Observation and Method must be taken with respect to component Parts mentioned before, in Division of Money, as in Division of single Numbers.

Example. Divide $\begin{array}{r} 3) \quad l. \quad s. \quad d. \\ 463 \quad 12 \quad 06 \end{array}$ into 18 equal Parts.

$$\begin{array}{r} 6) \quad 154 \quad 10 \quad 10 \\ \hline \end{array}$$

Answer $\begin{array}{r} 25 \quad 15 \quad 10\frac{1}{2} \\ \hline \end{array}$

By this Method of Division of Money (if the Quantity be, as aforesaid, made by even component Parts) you may, by dividing the Price of several Things, know the Price or Value of one Thing, at the said Rate, as well as by the Rule of Three: So doth Multiplication of Money answer Questions in the Rule of Three, when the first Number is a Unit or One.

Example by Division.

If 84lb. of Coffee cost $\begin{array}{r} 7) \quad l. \quad s. \quad d. \\ 31 \quad 10 \quad 0 \end{array}$ what is that a lb?

$$\begin{array}{r} 12) \quad 4 \quad 10 \quad 0 \\ \hline \end{array}$$

Answer 0 07 6 a Pound.

As in Multiplication of Money, to have an Answer you multiply the Price by the Quantity; so in Division of Money, you divide the Price by the Quantity to have your Answer.

And so much at present for Multiplication and Division, the various and excellent Uses of which will be better understood in the following Rules of Arithmetic, particularly in the next Rule, called Reduction.

REDUCTION.

REDUCTION is wrought by the foregoing Rules of Multiplication and Division.

For any greater Number or Name is turned into a lesser by Multiplication, by multiplying by so many of the lesser, as makes one of the greater.

For if you multiply Pounds in Money by 20; the Product

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duct is Shillings : Or Shillings by 12, the Product is Pence
Or Pence by 4, the Product is Farthings.

Any lesser Number or Name is turned into a greater by
Division, by dividing the lesser Name given by so many
of the said lesser Name, as makes one of the greater Name
required.

For, if you divide any Number of Farthings by 4, the
Quotient shews the Pence ; or Pence divided by 12, shew
Shillings in the Quotient ; and Shillings divided by 20,
give in the Quotient Pounds in Money.

*In 8961. how many Shil. How many Shillings, Pence,
lings, Pence, and Farthings ? and Farthings are in*

$$\begin{array}{r}
 \text{l.} \\
 896 \\
 20 \\
 \hline
 \text{Shillings } 17920 \\
 12 \\
 \hline
 35840 \\
 17920 \\
 \hline
 \text{Pence } 215040 \\
 4 \\
 \hline
 \text{Farthings } 860160
 \end{array}$$

$$\begin{array}{r}
 \text{l.} \quad \text{s.} \quad \text{d.} \\
 163 \quad 13 \quad 8 \\
 20 \\
 \hline
 \text{Shillings } 3273 \\
 12 \\
 \hline
 6554 \\
 3273 \\
 \hline
 \text{Pence } 39284 \\
 4 \\
 \hline
 \text{Farthings } 157136
 \end{array}$$

*In 860160 Farthings, How many Pence, Shillings, and
Pounds ?*

$$\begin{array}{r}
 4) 860160 \text{ (215040d.} \\
 8 \\
 \hline
 06 \\
 4 \\
 \hline
 20 \\
 20 \\
 \hline
 016 \\
 16 \\
 \hline
 0 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 12) 215040 \text{ (17920s.} \\
 12 \\
 \hline
 95 \\
 84 \\
 \hline
 110 \\
 108 \\
 \hline
 24 \\
 24 \\
 \hline
 0 \\
 \hline
 \end{array}$$

2|0) 1792|0 (896

16

19

18

12

12

0

First, According to the Rule before, I am to multiply the 163/. by 12, then set the Cypher 0 under the Line; but instead of that, I set 0 of the 13s. Next, 2 Times 3 is 6, and the 1 belonging to the 13, make 7, &c. and multiplying the Shillings by 12, I add the 8d.

Pence,

s. d.

13 8

Note, That an Hundred Weight is 112 Pounds: How many Pounds are there in five Hundred and three Quarters?

In 5 C. 3 qrs. how many Pounds Weight?

4

23

28 a Quarter of a C. is 28lb. or Tod.

184

46

644 Pounds.

s. and

20s.

Case.] When a Number of one Denomination is given to be reduced into a lesser Denomination

Rule.] Multiply the given Number by so many Units of the inferior Denomination into which you would have the Number given reduced, as are contained in an Unit of the Denomination which is given, and the Product is the Answer.

Example. In 476 Pounds, how many Farthings?

476 Pounds.

960 the Farthings in a Pound.

28560

4284

456960 Farthings for Answer.

I

Example

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Example. In 87 Hundred Weight, how many Pounds?

87 Hundred.

112 Pounds in one Hundred.

$$\begin{array}{r} 174 \\ 87 \\ 87 \\ \hline \end{array}$$

9744 Pounds for Answer.

Example. In 527 Ells Flemish, how many Quarters of a Yard, each Ell being three Quarters of a Yard?

527 Ells.

3 Quarters of a Yard in an Ell Flemish.

1581 Quarters of a Yard for Answer.

Example. In 328 Bales of Dowls, how many Pieces?

328 Bales.

3 Pieces in a Bale.

984 Pieces for Answer.

Example. In 484 Gros of Tape, each Gros 12 Dozen, each Dozen 2 Pieces, and each Piece 36 Yards, how many Yards?

484 Gros.

12 Dozen in a Gros.

$$\begin{array}{r} 968 \\ 484 \\ \hline \end{array}$$

5808 Dozens in 484 Gros. } Multiply.
72 Yards in a Dozen.

$$\begin{array}{r} 11616 \\ 40656 \\ \hline \end{array}$$

418176 Yards for Answer.

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Case 1.] When it is required to reduce Number of divers Denominations into the lowest Denomination.

Rule.] Work as in the last *Case*; but if you have any Number of the next inferior Denomination to that you are reducing, add such Number to the Product.

Example. In 364*l.* 5*s.* 5*d.* how many Pence?

<i>l.</i>	<i>s.</i>	<i>d.</i>	
364	5	5	Multiply and add the 5 <i>s.</i>
20			the Shillings in a Pound.

7285	Shillings in 364 <i>l.</i> 5 <i>s.</i>	} Multiply and add the 5 <i>d.</i>
12	Pence in a Shilling.	

14575
7285

87425 Pence in 364*l.* 5*s.* 5*d.* for Answer.

In the last Example in reducing the Pounds, say 0 Times in the Pounds is 0, but 5 (in the Shillings) is 5 Shillings; then say, 2 Times 4 is 8, &c. And, when you come to the Shillings, 2 Times 5*s.* is 10, and 5 in the Pence Place is 5, put down 5 and carry 1, &c. *Note,* That if you add any Thing in the Ten's Place, either in the Shillings, Pence, &c. you must add them when you multiply by the Figure in the Ten's Place of the Multiplier.

Example. In 48*l.* 17*s.* 11*d.* 2*q.* how many Farthings?

<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>q.</i>	
48	17	11	2	Multiply and add the 17 <i>s.</i>
20				the Shillings in a Pound.

977	Shillings in 48 <i>l.</i> 17 <i>s.</i>	} Multiply, adding the 11 <i>d.</i>
12	Pence in a Shilling.	

1965
977

11735	Pence in 48 <i>l.</i> 17 <i>s.</i> 11 <i>d.</i>	} Multiply and add the 2 <i>q.</i>
4	Farthings in a Penny.	

46942 Farthings in 48*l.* 17*s.* 11*d.* 2*q.* for Answer.

Examples. In 47C. 2qrs. 24lb. how many Pounds?

C. qr. lb.

47 2 24

4 Quarters in 112lb.

} Multiply and add
the 2qrs.

190 Quarters in 47C. 2qrs.

28 Pounds in 1 Q. of a C.

} Multiply and add
the 24lb.

1524

382

5344 Pounds is 47C. 2qrs. 24lb. for Answer.

This Question is more briefly resolved, as in the Margin, by first putting down your 47C. 4 Times, and the 2Q. 24lb. which is 80lb. in Tens and Units Place, to the Sum is the Answer.

47C. 2qrs. 24lb.

47

470

478

5344lb. for Answer.

Reduction ASCENDING

Is, when Numbers are reduced or changed from a lesser into a greater Denomination,

Case 1.] When the Number is given to be reduced to the next superior Denomination.

Rule.] Divide the said given Number by such a Number of Units of the Denomination given, as makes an Unit of the next superior Denomination, and the Quotient is the Answer.

Example. In 984 Pieces of Dowlas, how many Bales each 3 Pieces? See the Operation.

3) 984 (328 Bales for Answer.

9

8

6

24

24

0

Example

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Example. In 9744 Pounds how many Hundreds?

112) 9744 (87 Hundreds for Answer,

$$\begin{array}{r} 896 \\ \hline 784 \\ 784 \\ \hline 0 \end{array}$$

Case 2.] When a Number is to be reduced to a Denomination higher than the next superior Denomination.

Rule.] Divide the given Number, as before, by such a Number of Units of the Denomination given, as makes an Unit of the next higher Denomination, and note the Remainder. Then divide that Quotient by so many Units of that Name or Denomination which it is of, as makes an Unit of the next higher Denomination to the said Quotient, &c. noting the Remainders, as in the Example following.

Example. In 87425 Pence, how many Shillings and Pounds?

d.	s.	l.	
12) 87425	(728 5	(36 4	
...	2 0) ...		
34	12		
102	8	Answer 364l. 5s. 5d.	
65	05s Remains.		
5d. Remains.			

Example. In 5344 lb. how many Quarters and Hundreds?

lb.	Q.	C.	
28) 5344	(190	(47.	
...	4) ..		
254	30		
Rem. lb. 24	2 Quarters remain.		
		Answer 47C. 2Q. 24lb.	

I 3

Example.

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Example. In 418175 Yards, how many Grofs of Tape?

Divide the given Number by 72, and that Quotient by 12, for Answer; because 72 Yards is 1 Dozen, and 12 Dozen is 1 Grofs.

	<i>Yards.</i>	<i>Dozens.</i>	
72)	418175	(5808	(484 Grofs for Answer.
		12)	
	581	100	
	576	48	
	o Rem.	o Rem.	

These Questions are the Converse of those in Reduction Descending, and may serve for the Proof of them; and likewise to shew the Learner the Nature and Effects of the Rules.

Reduction Ascending and Descending

Are such Questions as are performed by Multiplication and Division, as are these that follow; and such-like.

Example. In 874 Ells Flemish, how many Ells English?

Multiply the given Number by 3, and divide the Product by 5, and the Quotient is the Answer.

874 Ells *Flemish*.
3 Quarters of a Yard in 1 Ell. } Multiply.

5) 2622 (524 $\frac{2}{3}$ Ells *English* for Answer.

...	
12	874
22	6
	Answer 534 $\frac{4}{5}$ or $\frac{2}{5}$.

2 Rem. which, placed over the Divisor, is $\frac{2}{5}$.

Or multiply by 6, and divide by 10; which is shorter.

Note, That the Remainder is always of the same Denomination with the Dividend.

Example. In 46C. of Cotton-Wool, how many Pounds, and what is the Price at 15d. a Pound? Answer 322l.

46C.

	d.	s.	l.
12) 77280	(644 0	322	
.....	2 0	...	
52	4		
15 Pence for one Pound.	48	4	
Remains 0	0	Remains.	

280 Pence for Answer, which reduce into Pounds as before taught, and per Margin.

Example. In 846 Dollars, each 4s. 6d. how many Pounds Sterling?

846 Dollars.
54 Pence per Dollar. } Multiply.

3384
4230
45684

	s.	l.	s.
12) 45684d.	2 0	3807	(190 7
.....	..		
96	18		
84	07	Remains.	
0		Remains.	

Example. To reduce Flemish Money into English.

In 465l. 13s. 4d. Flemish, how many Pounds Sterling, at 33s. 4d. Flemish, for 1 Pound Sterling? Answer 279l. 8s. Sterling.

Rule.] Divide the Pence in 465l. 13s. 4d. by the Pence 33s. 4d. and the Quotient is the Answer. See the Work.

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s.	d.	l.	s.	d.
33	4	465	13	4
12		20		
400		93 13 Shill. <i>Flem.</i>		
		12		

4|00) 1117|60 (279/. Sterl.

...

31

37

160/. Sterl. re.

20

4|00) 32|00 (8s. Sterl.

0

Thus you may reduce *Flemish* Money into *English*, let the Price of a Pound Sterling be reckoned any other Number of Shillings, or Shillings and Pence *Flemish*; but when the Price is as above, (which is the true Value) you may perform the same by multiplying the given Number by 3, and dividing the Product by 5; for 400 *Flemish* Pence is to 240 Sterling Pence, as 5 is to 8.

l.	s.	d.	
465	13	4	<i>Flemish.</i>
		3	
5)	1397	00	0
	279	08	0 Answer

Note, That *French* Livres, Sols, and Deniers, are reduced into Deniers (or Pence) as the *English* and *Dutch* Money is, by multiplying by 20 and 12.

Example. In 364 *French* Crown, each 54d. $\frac{1}{4}$ Sterling, how many Pounds, Shillings, and Pence, Sterling?

Rule.] Multiply the given Crowns by 54d. and the Product 19656d. to which add $\frac{1}{4}$ of 364 for the Farthing, and the Sum is 19747d. or 82l. 5s. 7d. Sterling for Answer. But you will find a briefer Way of performing these and such-like Questions by the Rules of Practice, which will be of great Use in casting up Bills of Exchange.

Example.

Example. In 1500 Pieces of Eight Mexico, each 52d. $\frac{3}{4}$ Sterling, how many Pounds Sterling?

Rule.] Multiply the 1500 by 52, and the Product is 78000 Pence; then for the $\frac{3}{4}$ multiply the 1500 by 3, and divide the Product by 8, and the Quotient is 562d. $\frac{1}{2}$, which add to the 78000d. and you have the Answer 78562d. $\frac{1}{2}$ Sterling, or 327 l. 6s. 10d. $\frac{1}{2}$. And this Rule is very useful in casting up Bills of Exchange to Cadiz, Leghorn, and Genoa; but may be something more briefly performed, as may all the rest, by Decimals, or the Rules of Practice.

Example. In 2900 Ducats, each 51d. $\frac{7}{8}$ Sterling, how many Pounds, Shillings, and Pence, Sterling?

Rule.] Multiply 2900 by 51, and the Product is 147900: Then multiply 2900 by 7, and divide the Product by 8, and the Quotient is 2537d. $\frac{1}{2}$, which added to the 147900, the Sum is 150437d. $\frac{1}{2}$ Sterling, or 626 l. 16s. 5d. $\frac{1}{2}$. This Example you will find useful in casting up Exchanges to Venice.

Example. In 2000 Millrees, each 6s. 8d. $\frac{1}{2}$, how many Pounds Sterling?

Rule.] Divide 2000 by 3, (because 3 6s. 8d. make 1 Pound Sterling) and the Quotient is Pounds; to which add the Pounds in 2000 Halfpence, as 4l. 3s. 4d. to 666l. 13s. 4d. and the Sum is 670l. 16s. 8d. for Answer; which Rule is useful in casting up Bills of Exchange from Oporto or Lisbon in Portugal. But if the Price of a Millree, in the Course of Exchange, be reckoned any other Number of Shillings and Pence, you may work either by the Rules of Practice following, or reduce the Value of a Millree into its lowest Denomination, and reduce the Product of the Millrees thereby into Pounds.

More promiscuous Examples of both Kinds of Reduction, one proving the other.

In 276l. 12s. how many Pence?

$$\begin{array}{r} 20 \\ \hline 5532 \\ 12 \end{array}$$

Answer 66384d.

12)

In 66384d. how many Pounds?

$$\begin{array}{r} 210 \overline{) 55312} \end{array}$$

Answer £276 12

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In 47964 Grains, how many Pounds Troy ?

$$\begin{array}{r}
 \begin{array}{r}
 24) 47964 \text{ (199|8} \\
 \underline{24 \dots} \\
 239 \\
 \underline{216} \\
 236 \\
 \underline{216} \\
 204 \\
 \underline{192} \\
 \text{Grains } 12 \\
 \underline{\hspace{1cm}}
 \end{array}
 \begin{array}{r}
 12) 99-18 \text{ pw.} \\
 \underline{\hspace{1cm}} \\
 8 \text{ lb. } 3 \text{ oz.} \\
 \underline{\hspace{1cm}} \\
 \text{lb. oz. pw. gr.} \\
 \text{In } 8 \quad 3 \quad 18 \quad 12 \text{ how many Grains?} \\
 \underline{\hspace{1cm}} \\
 12 \\
 \underline{\hspace{1cm}} \\
 99 \\
 \underline{\hspace{1cm}} \\
 20 \\
 \underline{\hspace{1cm}} \\
 1988 \\
 \underline{\hspace{1cm}} \\
 24 \\
 \underline{\hspace{1cm}} \\
 7994 \\
 \underline{\hspace{1cm}} \\
 3997
 \end{array}
 \end{array}$$

Answer 47964 and Proof.

In 34 C. $\frac{3}{4}$ of Cotton Wool, how many Pounds ?

$$\begin{array}{r}
 \begin{array}{r}
 \text{C.} \\
 34 \\
 34 \\
 34 \\
 \underline{34|84} \\
 \underline{\hspace{1cm}} \\
 3892
 \end{array}
 \begin{array}{r}
 \text{C.} \\
 112) 3892 \text{ (34}\frac{3}{4} \text{ Proof.} \\
 \underline{336} \\
 532 \\
 \underline{448} \\
 84 \text{ lb. or } \frac{3}{4} \text{ of a C.}
 \end{array}
 \end{array}$$

*In 456 C. 3 qrs. 27 lb. of Copper, how many Pounds ?
And what it comes to, at 21 d. per lb.*

C.
456
456
456
456
111

51183 Pounds at
21 d. per lb.

51183
02366

Or thus,

C.
456
112

5472
456
111

51183 Pounds.

074843 Pence; which bring into Pounds by Division,
or Reduction Ascending, as before shewn, and
will amount to 4478 l. 10s. 3 d.

Bring 4796 Ells Flemish into Ells English.

Multiply by 3, and divide by 5; because 3 Quarters
make an Ell *Flemish*, and 5 an Ell *English*.

4796
3
5) 14388
2877 $\frac{3}{5}$

Reduce 546 Ells English into Yards.

Multiply by 5, and divide by 4, thus:

456 *English* Ells.

5 qrs. 1 E. Ell.

In 570 Yards how many Ells
English?

4) 2280 Quarters.

570

4 Qrs. in a Yard.

Yards 570 Answer.

Eng. Ells.

5) 2280

456 Answer and Proof.

I 6

Bring

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Bring 130 Tuns of Wine into Gallons.

4 Hhds 1 Tun.

		<i>Or thus,</i>
520		252 Gall. 1 Tun.
63 Gallons 1 Hhd.		130 Tuns.
1560		7560
3120		252

Answer 32760 Gallons. 32760
And so on the contrary by *Division*.

Lasts. Qrs. Bushels, Pecks.

Reduce 42 3 5 2 into Pecks.
10 Qrs. 1 Last.

423 Qrs.
8 Bushels 1 Qr.

3389
4 Pecks 1 Bush.

Here I multiply by 10
and take in 3 Qrs. and
then by 8, and take in
Bushels; and, lastly, by 4
and take in 2 Pecks.

13558 Pecks, in 42 Lasts, 3 Quarters, 5 Bushels, and
2 Pecks.

In 13558 Pecks, how many Lasts, &c.

4)

8) 3389-2 Pecks taken in.
110) 42|3-5 Bushels taken in.

Lasts 42—3 Quarters taken in.

Answer, 42 Lasts, 3 Quarters, 5 Bushels, 2 Pecks.

Thus, by the two foregoing Examples it is seen, that
Reduction Ascending and Descending mutually prove each
other, as was said before; and is no more than Multiplica-
tion and Division proving one another.

*By Reduction also Foreign Coins or Exchanges may be reduced
into Sterling Money; and, on the contrary, Sterling Money
to Foreign.*

Example.

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Example. Reduce 246 Venetian Ducats de Banco into Sterling Money, the Exchange at 52 d. Sterling per Ducat,

$$\begin{array}{r} 246 \\ 52 \\ \hline 492 \\ 1230 \\ \hline \end{array}$$

$$12) 12792$$

$$210) 10616$$

53 l. 6s. To be paid in London for the 246 Ducats drawn in Venice.

Reduce 53 l. 6s. Sterling into Ducats at 52 d. Sterling per Ducat.

$$\begin{array}{r} 20 \\ \hline 1066 \\ 12 \\ \hline \end{array}$$

$$52) 12792 \text{ (246 Ducats to be paid in Venice for the } 104 \text{ } 53 \text{ l. 6s. drawn in London.)}$$

$$23, \text{ \&c.}$$

To reduce Flemish Money into Sterling Money, divide the Pence Flemish by the Par of Exchange, viz. 33s. 4d. and the Quotient will be the Sterling Money; and what remains multiply by 20, &c.

Example. In 242 l. 13s. 4d. Flemish, how many Pounds Sterling, &c.

$$\begin{array}{r} 33 \text{ s. } 4 \text{ d. Flemish} \\ 12 \\ \hline 4853 \\ 12 \\ \hline \end{array}$$

$$4100) 582140$$

$$1. 145 \text{ Sterl.}$$

$$\begin{array}{r} \text{Remains } 240 \\ 20 \\ \hline \end{array}$$

$$4100) 48100$$

$$12 \text{ Shillings Sterling.}$$

B

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By the Work it appears, that 145*l.* 12*s.* Sterling, answer or is equivalent to 242*l.* 13*s.* 4*d.* *Flemish*, at 33*s.* 4*d.* *Flemish* per Pound Sterling.

Thus *Flemish* Money may be reduced to Sterling Money though the *Par* of Exchange be at any other Rate of Shillings and Pence *Flemish*: But when at the Rate as above viz. 33*s.* 4*d.* (the common *Par*) then the Answer is sooner found by multiplying by 3, and dividing by 5; for 400 *Flemish* is the same to 240*d.* Sterling, (each being a Pound as 3 is to 5; for if you divide 240 by 3, it quotes 80; 400 divided by 5, quotes the same.

The foregoing *Example* done by the last proposed Methods.

$$\begin{array}{r}
 \text{£ } 340 \quad 13 \quad 4 \text{ Flemish.} \\
 \hline
 5) 722 \quad 00 \quad 0 \\
 \hline
 \text{£ } 144 \quad 08 \quad 0 \text{ Sterling.}
 \end{array}$$

Note, French Money is reduced to Sterling, viz. Livres Sols, and Deniers, (or French Pence) as Sterling and *Flemish* Money is, by multiplying by 20 and by 12.

In 426 French Crowns, each 54*d.* $\frac{1}{4}$ Sterling, how many Pounds, &c. Sterling?

$$\begin{array}{r}
 \text{F. C.} \\
 426 \\
 54 \\
 \hline
 1704 \\
 2130 \\
 \hline
 106 \frac{2}{4} \text{ or } \frac{1}{2} d. \\
 12) 23110 \quad 10d.
 \end{array}$$

And this 20) 192|5
1925 divided
by 20 makes Ans. 196 5 10 $\frac{1}{2}$ S.

In this Example, the Number of Crowns is multiplied by 54*d.* and for that I take the 4th Part of 426, which is 106 $\frac{2}{4}$ of a Penny, or a Halfpenny; which, added to the other Pence, gives for Total 23110*d.* which, divided by 12, quotes 1925, and 10*d.* remains; the Answer to be 96*l.* 5*s.* 10*d.* $\frac{1}{2}$ Sterling: As in the Work.

Again, Bring 1600 Pieces of Eight Mexico, at 54*d.* Sterling, into Pounds, &c. Sterling.

1600

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$$\begin{array}{r} 1600 \\ 54 \\ \hline \end{array}$$

$$\begin{array}{r} 6400 \\ 8000 \\ 200 \\ 200 \\ \hline \end{array}$$

$$12) 86800 d.$$

$$2|0) 723|3 \ 4$$

$$\pounds 361 \ 13 \ 4$$

Here the 16 Pieces of Eight are multiplied by 54, to bring them into Pence; and for the $\frac{2}{3}$ I take the $\frac{2}{3}$ of 1600 twice, &c. as in the Work. And the Answer is, $\pounds 361 \ 13 \ 4$.

This Method is of Use in reducing the Exchanges of *Liz*, *Leghorn*, and *Genoa*. Or when the Exchange is at many Pence, and Eighths of a Penny, (as often the Exchanges run) then multiply the given Number to reduce it Pence, by the Pence contained in a Piece of Eight; also multiply the said given Number apart, by the Numerator or upper Figure of the Fraction, and divide by the denominator or under Figure of the Fraction, and the quotient will be Pence; which add to the other Pence reduced by multiplying the given Numbers by the Pence contained in one of the Pieces for Exchange; then divide Total Pence by 12, &c.

Example. Bring 296 Dollars, at 52d. $\frac{6}{8}$ Sterling, into *sterling*, &c. *Sterling*.

296 Dollars.

$$\begin{array}{r} 52 \\ \hline 592 \\ 1480 \\ \hline 15392 \\ 222 \\ \hline \end{array}$$

$$12) 15614$$

$$2|10) 130|1 \ 2$$

Dollars.

$$\begin{array}{r} 296 \\ 6 \\ \hline \end{array}$$

$$8) 1776$$

222 Pence.

Answer. $\pounds 65 \ 1$ Sterling Money due for 296 Dollars, at 52d. $\frac{6}{8}$ Sterling per Dollar.

But

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But Ducats, Dollars, Crowns, Millrees, &c. are more expeditiously cast up by the Rules of Practice hereafter to be shewn.

And so much Reduction.

The GOLDEN RULE, or Rule of Three Direct.

THIS Rule has its Name from its extraordinary Usefulness, not only in Arithmetical Questions, but in all Parts of the Mathematics.

It is also called *The Rule of Three*, because there are always three Numbers given to find a Fourth. And it is properly called *The Rule of Proportion*, because first Number bears such Proportion to the Second, as the Third does to the Fourth.

The Design of this Rule is to shew how to find a fourth Proportionable Number, by having three Numbers given, which is deducible from the *sixteenth Proposition of the sixth Book of Euclid's Elements*.

The Rule is,

Multiply the second and third Numbers together, and divide the Product by the first Number, and the Quotient thereby arising is the fourth Number sought. Or,

Divide the second Number by the first, and multiply the Quotient by the Third, and the Product is the Number required: For the fourth Number contains the Third, so often as the Second contains the First. And this is called *Direct Proportion*.

All Questions in this *Rule of Three* consist of three Numbers, whereof two are always of one Kind or Denomination: As in this Example:

If I give 10s. for 5 Yards, what shall I give for 15 Yards at the same Rate?

Now two of these are of the same Kind, that is, the Number of 5 and 15, which are both Yards, and remember that the Number, concerning which the Question is asked, must be in the third Place.

Now in this Question the 15 Yards is the Number, the Price of it being required by the Question; place it therefore in the third Place.

Then

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Then seek out the other Number of the same Kind or Denomination, which must be Yards also, which in this Question is 5; set this in the first Place, and then the other Number (that is 10s.) will consequently claim the second Place, and the Answer to the Question will be always of the same Denomination with it, which here is Shillings.

Now the Question stated, according to the foregoing Rules, stands thus:

If 5 Yards cost 10s. what will 15 Yards cost?

$$\begin{array}{r}
 15 \\
 \hline
 5 \overline{) 150} \text{ (30 Shillings Answer.} \\
 \underline{15} \\
 00 \\
 \hline
 \end{array}$$

Here I multiply the second Number by the third, and divide the Product by the first.

Note, That the three Numbers are 5, 10, 15.

Proof of the last Question.

What shall I pay for 5 Yards, when 15 Yards are sold for 30 Shillings?

If 15 Yards cost 30s. what will 5 Yards cost?

$$\begin{array}{r}
 5 \\
 \hline
 15 \overline{) 150} \text{ (10s. Answer.} \\
 \underline{15} \\
 00 \\
 \hline
 \end{array}$$

What is the Interest of 75 Pounds, at the Rate of 8 Pounds per Cent. per Annum?

The Numbers, when placed according to the above Directions, will be stated thus:

L. P.	L. I.	L. P.
100	8	75

In the Example there are two Numbers that are Principal

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Principal Money, and one that is Interest; therefore the Interest (according to the Rule) must stand in the Middle, or second Place; the Principal on which the Interest dependeth, *viz.* 100 (8l. being the Interest thereof) must stand in the first Place towards the Left-hand, and the other Principal on which the fourth Number (which is the Number sought) dependeth, must possess the first Place towards the Right-hand.

By these Rules foregoing, you may with Ease and Certainty perform any Operation in direct Proportion, and for your farther Information take the Examples following.

Example. *If the Interest of 100l. for one Year be 8l. what is the Interest of 73l. for the same Time?*

L. P.	L. I.	L. P.
100	8	75 8

100) 600 (6l. for Answer.

Example. *If 32 Rundlets of Brandy cost 96l. what will 4 Rundlets cost at that Rate?*

Run.	l.	Run.
32	96 4	4

32) 384 (12l. Answer.

64

o Remains.

Example. *If 12 Bags of Cotton Wool cost 184l. what will 17 Bags cost?*

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<i>Bags.</i>	<i>L.</i>	<i>Bags.</i>	
12	184	17	
	17		<i>l. s. d.</i>
			260 13 4 Answer.
	1288		
	184		
12)	3128 (260 <i>l.</i>		
	..		
	72		
	8 Pounds remain.		
	20 Shillings multiply.		
12)	160 (13 Shillings.		
	..		
	40		
	4 Shillings remain.		
	12 Pence multiply.		
12)	48 (4 Pence.		
	0 Remains.		

Note, That in the last Example, when any Thing remains that is reducible to a lower Denomination, after it is so reduced, it must be divided continually by the first Number.

Case.] When any of the three Numbers given happen to be of divers Denominations.

Rule.] You may reduce them into the lowest Denomination. And if your first Number requires to be reduced, your third must be reduced likewise into the same Denomination as the first; for the first and third Number, before you begin your Operation, must be always of one Name or Denomination.

Example. If 17 Hogsheads of Sugar cost 32*l.* 12*s.* what will 5 of those Hogsheads be worth?

Hbds.

<i>Hbds.</i>	<i>l.</i>	<i>s.</i>	<i>Hbds</i>
17	320	12	5
	20		

	6412	Shillings.	} Multiply.
	5	Hhds.	
17)	32060	(188 5	<i>l. s. d. q.</i>
		2 0)	(94 5 10 2 ⁶ / ₁₇ .
	150	8	
	146	0	Remains.
	100		

	15	Shillings remain.	} Multiply.
	12	Pence in a Shilling.	
	30		
	15		
17)	180	(10 Pence.	
	10	Pence remain.	} Multiply.
	4	Farthings in a Penny.	
17)	40	(2 Farthings.	
	6	Farthings remain to be divided by 17.	

Note, That when you have multiplied the second and third Numbers together, and divided the Product by the first, the Quotient is of the same Denomination, as the second Number is, after you have reduced it (as in the last Example) into its lowest Denomination given.

Example. If 4C. 1qr. 14lb. of Sugar cost 14l. what will 18C. cost?

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C.	qr.	lb.	l.	C.
4	1	24	14	18
4				18
42				18
45				18

200 lb. of Sugar.

2016 lb. of Sugar. } Multiply.
14 l. Sterling.

8064
2016

5|00) 282|24 (56 8 11 2 $\frac{40}{300}$

32

224 Pounds remain. } Multiply.
20 Shillings in 1 l.

5|00) 44|80 (8 Shillings.

480 Shillings remain. } Multiply.
12 Pence in 1 s.

960
480

5|00) 57|60 (11 Pence.

7

260 Pence remain. } Multiply.
4 Farthings in 1 d.

5|00) 10|40 (2 Qrs.

40 Farthings remain to be divided
by 500.

Note farther, That what Farthings remain to be divided
by

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by the common Divisor, (as in the last Example) because you can reduce them into no lower Denomination, you may place them over your Divisor, as Fractions of a Farthing, which shall be explained when we come to Vulgar Fractions, &c.

Case.] When the first Number of the three given is but an Unit, the Operation is performed by Multiplication only.

Example. *If I give 15 s. for a Pound of Thread, what will 250 lb. cost me at that Rate?*

lb.	s.	lb.
1	15	250
		15
		1250
		250

3750 Shillings Answer, or 187*l.* 10*s.*

Example. *At 14*l.* 10*s.* 6*d.* per Bag of Hops, what cost 55 Bags?*

Bag.	<i>l.</i>	<i>s.</i>	<i>d.</i>	Bags.
1	14	10	6	55
	20			
	290			
	12			

3486 Pence
55 the 3*d* Number, } Multiply.

17430
17400

191430 Pence Answ. or 797*l.* 12*s.* 6*d.*

Case.] When the third Number of the three given (or that towards the Right-hand) is an Unit; such Operation is performed by Division only, if the Number need no reducing.

Example. *If 40 Pieces of Broad Cloth cost 590*l.* what will 1 Piece cost?*

Pieces.

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Pieces. l. Piece.
 40 590 1
 410) 590 (14 $\frac{3}{4}$ or 14 l. 14 s.
 . Answer.

19

30 Pounds remain.

Example. If 14 Hogsheads of Tobacco, Nett Weight 9285 lb.
 619 l. 10 s. what will 1 Pound cost at that Rate?

lb.	l.	s.	lb.	s.	d.	q.
9285	619	10	1	Answer	1	4 0 $\frac{486}{5183}$.
	20					

9285) 12390 s. (1 Shilling.

3105 Shillings remain.
 12

9285) 37260 d. (4 Pence.

120 Pence remain.
 4

480 Farthings remain to divide by 9285.

If one Bushel of Rye cost 3 s. 6 d. what will a Last, or 100 Quarters cost, after that Rate?

First reduce the 3 s. 6 d. into Pence, that is 42 d. and the Quarters into Bushels, that is 80, and set the Question thus:

If 1 Bushel cost 42 d. what will 80 Bushels cost?
 80

3360

The first Number or Place (being 1) will neither multiply nor divide, then bring the 3360 d. in Shillings by dividing by 12, as follows:

12)

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12) 3360 (210 Shillings.

$$\begin{array}{r} 24 \\ \hline 96 \\ 96 \\ \hline 0 \end{array}$$

2|0 28|0 (14l.

$$\begin{array}{r} 2 \\ \hline 08 \\ 8 \\ \hline 0 \end{array}$$

14l.
20

For the Proof of this,
and the like Questions,
reduce the Answer into
Pence, to know whether
your Work be right, as
appears in the Work.

$$\begin{array}{r} 280 \\ 12 \\ \hline 3360 \end{array}$$

If a Chaldron of Coals (that is, 36 Bushels) cost 22s. what will 1 Bushel cost?

Reduce the 22s. into Pence, by Reduction, which makes 264d. which divide by 36 thus:

Now the Remainder 12 being the third Part of the Divisor 36, shews the Part of a Penny to be $\frac{1}{3}$, so that a Bushel at 22s. a Chaldron, will cost 7d. and a third Part of a Penny.

$$\begin{array}{r} 36) 264 (7d. \\ 252 \\ \hline 12 \end{array}$$

If 112 lb. of Tobacco cost 400d. what will 1lb. cost?

Divide the 400d. by the 112lb. Weight, and the Quotient gives 3d. the Pound, and the Remainder will be 64 which is somewhat above Half; the Divisor 112 shews that the $\frac{64}{112}$ Fraction is somewhat more than Half a Penny, to be added to the 3d. the Pound above.

If I paid 432l. for 525 Quarters of Malt, what is the Price of 1 Quarter after that Rate?

Which being properly stated will stand thus:

If 525 Quarters cost 432l. what will 1 Quarter cost?

In this Question you cannot multiply the second Number by the third, because the third Number (or Place) is but one.

Therefore to perform this Question with Ease, reduce 432l. into Farthings by Reduction, which makes 41472 Farthings to be divided, which divide by 525, the Quarters

of Malt, and the Quotient, the Answer, 789 Farthings; the Remainder, after the Division is ended, is but the Parts of a Farthing.

Lastly, The 789 Farthings being reduced, are 16s. 5d. $\frac{1}{4}$ therefore, if 525 Quarters of Malt (or Tods of Wool or Goods) be sold for 432l. one Quarter will cost 16s. 5d. $\frac{1}{4}$ after that Rate. Or, which is better, reduce the 432l. into Shillings, and it gives 8640, which divide by 525, and the Quotient is 16, and the Remainder 240; which multiply by 12, the Product is 2880; which divide by 525, the Quotient is 5 Pence, and the Remainder 255; that multiplied by 4, and the Product 1020, divided as before, gives 1 Farthing, and $\frac{255}{525}$ Parts of another Farthing.

If a Grocer bought 5 C. $\frac{3}{4}$ Weight of Nutmegs, which cost him 163l. 13s. 8d. how may he sell 1lb. Weight without Gain or Loss?

Reduce the Money into Pence, it makes 39284d. for the Dividend, and 5 C. $\frac{3}{4}$ Weight into Pound Weight, by Reduction, makes 644 Pounds Weight for the Divisor; then divide the 39284 by 644, and the Quotient gives 61 Pence, the Price of one Pound, viz. 5s. 1d.

Note, That what Sum of Money you desire to gain, add to the Price, and work as above, to know what the Price of one Pound will be, so will you know what you get by every single Pound.

Suppose the yearly Rent of 20l. belonged to 7 Landlords.

Reduce the 20l. into Farthings, and they are 19200, which divide by 7, the Quotient gives 2742 Farthings $\frac{6}{7}$, for each landlord, from which you may subtract the Taxes.

By the same Rule you may draw a Composition of Debts, if a Man owe to several Creditors, as suppose it comes all to 25l. 16s. reduce it into Farthings, and divide it by the Number of Pounds owing, &c. As,

	l.	s.	d.	q.
Suppose a Man leaveth 13l.	To the first	3	12	2 2
pay his Debts, and he owes	— Second	4	06	0 0
Man 5l. the second 6l. and	— Third	5	01	9 2
third 7l. which make 18l.				
What is each Man's Share?		13	00	0 0

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If 28 Quarters of Barley cost 30l. 10s. 6d. tell me what 84 Quarters come to at that Rate?

If 24 Quarters cost 30l. 10s. 6d. what will 84 Quarters cost?

	20		12
Shillings	610	28)	615384 (21978 Pence.
	12		56
	1226		210) 18311-6
	610		55
			28
Pence	7326		£. 91 11 6
	84		
	29304		273
	58608		252
			218
			196
Sum	615384		224
			224
			00

84 Quarters come to 91l. 11s. 6d.

For a Proof I reduce the
91l. 11s. 6d. into Pence.

20
1831
12
3668
1831
21978

If 50l. 8s. be paid for 112 Yards, how much is that for 7 Yards?

Note, The 50l. 8s. being reduced into Shillings, the Question will stand thus:

If 112 Yards cost 1008s. what will 7 Yards cost?

	7
112)	7056 (63s. Answer.
	672
	336
	336
	0

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If 3l. 3s. be paid for 7 Yards of Cloth, how many Yards shall I have for 25l. 4s?

If 63s. buy 7 Yards, what will 504s. buy?

63) 3528 (56 Yards Answer.

$$\begin{array}{r}
 315 \\
 \hline
 578 \\
 378 \\
 \hline
 0
 \end{array}
 \qquad
 \begin{array}{r}
 504 \\
 7 \\
 \hline
 3528
 \end{array}$$

If 2l. 14s. 3d. be paid for 3 Yards and an Half, what shall I pay for 27 Yards and 3 Quarters?

Note, The 27 Yards and $\frac{3}{4}$ being reduced into Quarters, and the Money into Pence, it stands thus:

Quarters	d.	Quarters
14	651	111
	111	
	651	
	651	
	651	
	72261	

The Dividend, the first Number 14 being the Divisor.

$$\begin{array}{r}
 7) 72261 \\
 \hline
 2) 10323 \\
 \hline
 12) 5161 - \frac{1}{2} \\
 \hline
 210) 4310 - 1
 \end{array}$$

Answer £ 21 10 1 $\frac{1}{2}$

How many Yards of Cloth shall I buy for 21l. 10s. 1d. $\frac{1}{2}$, when 3 Yards and an Half are sold for 2l. 14s. 3d.

First, Reduce the 2l. 14s. 3d. into Farthings, which make 2604, the first Number; next, the 3 Yards and an Half into quarters, which make 14 for the second Number.

K 2

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ber, and the 21 *l.* 10*s.* 1 *d.* $\frac{1}{2}$, and it makes 20646 Farthings; then multiply that by 14, and the Product is 289044, to be divided by 2604, and the Quotient gives 111 Quarters of Yards, to divide by 4, (the Quarters in a Yard) and the Quotient is 27 Yards $\frac{3}{4}$, viz. 3 Quarters, Answer.

Thus stated being reduced :

Farthings.	Quarters.	Farthings.
2604	14	20646
		14

If one Pound of Iron cost 3 Pence Half-penny, what will 7 C. 3 qrs. 17 lb. cost?

4

31 Quarters of Hundreds.
28 Pounds in a $\frac{1}{4}$ of an Hundred.
Take in 17 lb.

255
63

Pounds 885 in 7 C. 3 qrs. 17 lb.
14 Farthings in 3 *d.* $\frac{1}{2}$

3540
885

4) 12390 Farthings, Answer.

12) 3097 $\frac{1}{2}$

2|0) 25|8-1

Answer £. 12 18 1 $\frac{1}{2}$

Note, That this Example may serve for a Rule to reduce Hundreds, Quarters, and Pounds, into Pounds; but most Tradesmen set the Weights in short, thus, 7 — 3 — 17, instead of setting them as above, 7 C. 3 qrs. 17 lb.

Besides this Way of Proof, of reducing the Total to Farthings again, is most necessary for young Learners, in most of the Questions in the Rule of Three.

The single Rule of Indirect Proportion.

Whereas in the former Rule of Direct Proportion, the fourth Number was always proportionably greater or lesser than the Third, as the Second was greater or lesser than the First; but in this Kind of Proportion, 'tis just the contrary, for the greater the third Number is, the less is the Fourth: and the less the Third is, the greater is the Fourth; for which Reason it is called Indirect or Reverse Proportion.

And whereas in the last Rule the Product of the First and Fourth is equal to that of the Second and Third; in the Proportion I am now treating of, the Product of the Third and Fourth is equal to that of the first and second Numbers; which may serve as a Proof to both.

The Method of stating any Question in this Proportion is the same with the Direct Proportion; but to find the Number required this is the

Rule.] Multiply the first and second Numbers towards the Left-hand together, and divide the Product by the Third, and the Quotient arising is the Answer.

A Rule to know whether a Question proposed is to be answered by the Rule of Proportion, Direct or Indirect.

Having stated the three Numbers given, as is formerly directed, calling the middle Number the Mean, and the two outermost Numbers the Extremes; consider, from the Nature of the Question, whether the third Number requires more or less than the second Number; if it requires more, the lesser Extreme is to be your Divisor; but if the Third requires less, the greater Extreme is your Divisor. Now so often as this lesser, and the greater Extreme happeneth to be the third Number, or that next the Right-hand, so often is your Proportion Indirect; but when they are the first Number, the Proportion is Direct: An Example or two will make it plain.

Example. If a Board be 9 Inches broad, how much in Length will make a square Foot?

Say, if 12 Inches broad require 12 in Length to make a square Foot, what Length will 9 Inches broad require? It will require more Length, because there is less Breadth. See the Work.

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In. br. long In. br.

12 12 9

9) 144 (16 Inches in Length for Answer.

54

0

Example. *How many Yards of Silk 3 Quarters broad, will line 9 Yards of Broad-Cloth, that is two Yard. broad?*

Say, if 6 Quarters wide require 9 Yards in Length, what will 3 Quarters wide require in Length?

Q. br. Y. long. Q. br.

6 9 3

3) 54 (18 Yards in Length for Answer.

24

0

Example. *If when the Price of a Buskel of Wheat is 6s. 3 d. the Penny-loaf weigheth 9 Ounces, what must the Penny-loaf weigh, when the Price of a Buskel of the same Wheat is 4s. 6 d. The Question is thus stated.*

s. d. oz. s. d.

6 3 9 4 6

12 12

75 Pence.

54 Pence your Divisor.

9

54) 675 (12 Ounces.

54) 540 (10 Penny-weights.

135

0

27 Ounces remain.
20 Penny-weights.

} Multiply.

540

Answer.

lb. oz. pw.
1 00 10

The

The double Rule of Direct Proportion.

In this Kind of Proportion there are five Numbers given to find a Sixth, which Sixth will bear such Proportion to the Product made of the fourth and fifth Numbers, as the third Number does to the Product made of the first and second Numbers.

The Rule for stating the five Numbers given is ;

Make that the third Number from the Left-hand, which is of the same Denomination with the Number sought ; then place the two Numbers in the first and second Place to the Left-hand, which are conjunctive in the Sense of the Question to the Third, and the other two Numbers in such Order, that the Fourth may be of the same Denomination with the First, and the Fifth of the same with the Second : Which done,

Rule.] Divide the Product of the three next the Right-hand, multiplied one in another, by the Product of the two next the Left-hand, and the Quotient is the sixth Number sought for.

Example. *If 100l. in 12 Months gain 6l. Interest, what will 500l. gain in 8 Months?*

L. P.	Months.	L. I.	L. P.	Months.
100	12	6	500	8
12			6	
Divisor 1200			3000	
			8	

12|00) 240'00 (20l. Answer.

24

00 Remains.

By the Work you may perceive that 500l. will gain 20l. in 8 Months, at the Rate of 100l. Principal gaining 6l. Interest in 12 Months.

This Question, or any other of this Nature, may be resolved at two single Rules of Proportion, thus : *If 100l. require 6l. what will 500l. require?* The Answer is 30l.

Then say, *If 12 Months require 30l. what will 8 Months require?* The Answer (as before) is 20l.

The Double Rule of Indirect Proportion.

The Rule for stating your Question.

Place the three first Numbers toward the Left-hand, in the same Order you did in the last Rule: And for the other two, place that the Fourth, which is of the same Denomination with your second Number, and consequently the other next the Right-hand: So will your first and last, viz. that required, be of one Denomination, your second and fourth of another, and your third and fifth of another. And,

The Rule for performing the Operation is,

Divide the Product of the first, multiplied into the second, and that Product into the fifth, by the Product made of the third and fourth, and the Quotient is the Answer.

Example. *What Principal will raise 20 l. in 8 Months, at 6 per Cent. per Annum.*

L. P.	Months.	L. I.	Months.	L. I.
100	12	6	8	20
12		8		
1200		48	your Divisor.	
20				

L. In.

48) 24000 (500 Quotient, for Answer; which proves the last Operation.

0 Remains.

The Reason and Demonstration of the Single Rule of Direct Proportion.

If 4 Numbers are geometrically proportional, the Rectangle or Product, made of the Means, is equal to that of the two Extreams, from *Euclid, Lib. 6. Prop. 16.* from which I shall prove the Method for finding the fourth Proportional.

Example. *Admit 4 is in Proportion to 12. as 18 is to a fourth Number unknown; for which put [u] they will stand thus:*

1. i. e. As 4 is in Proportion to 12. so is 18 to the unknown Number; then from the fore-mentioned Proposition,

$$4u = 216$$

2. *i. e.* Four Times (u) (which represents the unknown Number) the Product of the first and fourth, is equal to 12 Times 18, *viz.* 216, the Product of the two Means; then it necessarily follows,

$$u = \frac{216}{4}$$

3. *i. e.* That (u) is equal to 216, divided by 4; for if 4 Times (u) is equal to 216, then 1 Time (u) must be equal to one fourth Part of 216: And,

$$\frac{216}{4} = 54$$

4. Since (u) or the unknown Number, is equal to one fourth Part of 216, and that $\frac{1}{4}$ Part of 216 is equal to 54; therefore (u) is equal to 54, which is the fourth Number sought; and if you compare the several Steps, you will find the fourth Number to be discovered after the same Method given for finding it, at the Beginning of this Rule, which is by multiplying the second and third Numbers together, and diving the Product by the first.

Or thus, from this *Axiom.*

That the fourth Number containeth the third so often as the second does the first.

Hence $\frac{12}{4} = \frac{u}{18}$, that is $\frac{1}{4}$ of 12 is equal to one 18th of (u).

Now $\frac{12}{4} = 3$, therefore $\frac{u}{18} = 3$.

i. e. Twelve divided by 4, is equal to 3; therefore u divided by 18 must be equal to 3.

And if $\frac{u}{18} = 3$, then $3 \times 18 = u$.

i. e. If u divided by 18 is equal to 3, then 3 Times 18 must be equal to u , and consequently (u) is equal to 54, for 3 Times 18 is 54, as before.

The Demonstration of the Single Rule of Indirect Proportion.

By the Definition of this Rule in the two foregoing Places, the Product of the first and second Numbers is equal to that of the third and fourth: From whence this Denomination arises.

6 9 3 u
Therefore by the Definition,

$$6 \times 9 = 3 \times u, \text{ or}$$

$$54 = 3u,$$

i. e. The Rectangle of the two first Numbers 6 by 9 is equal to that of u by 3.

K 5

Now

Now if $54 = 3u$, $u = \frac{54}{3}$.

i. e. If 54 is equal to three Times (u) then it follows, that one Time (u) is equal to one third Part of 54.

$$\frac{54}{3} = 18, \text{ therefore,}$$

$$u = 18.$$

i. e. One Third of 54 being 18, therefore u is equal to 18, which was required; so the Definition is cleared.

By the same Rules may the double Rules of Proportion be demonstrated; but this Book being chiefly designed for the Practice of young Beginners, my designed Brevity in Things speculative requireth, that I pass forward to what is more practical.

The Proof of the Rules of Proportion.

Every Kind of Proportion I have discoursed of may have the Operations proved two Ways.

Single Direct Proportion.

When four Numbers are Direct in Proportion, the Product, made of the first and fourth, is equal to that of the second and third; otherwise the Work is not rightly performed.

2dly, The second Way is thus: As the fourth Number is to the third, so is the second to the first; otherwise the Work is not right.

Single Indirect Proportion.

When four Numbers are in an Indirect Proportion, the Rectangle of the first and second is equal to that of the third and fourth; otherwise there is an Error in the Work.

2dly, Thus: As the first is to the third, so is the fourth Number to the second, in a direct Proportion; otherwise the Operation is not rightly performed.

Double Direct Proportion.

When a sixth Number is found in a Direct Proportion, the Rectangle of the first, second, and sixth, is equal to that of the third, fourth, and fifth Numbers, if the Work is not erroneous.

2dly, Thus: As the Product of the fourth and fifth Numbers is to the sixth, so is the Product of the first and second to third, in a Double Direct Proportion.

Double

Double Indirect Proportion.

When five Numbers are given, and a sixth found in an Indirect and Reverse Proportion, the Rectangle of the first, second, and fifth, is equal to that of the third, fourth, and sixth Numbers, if the Work is performed right.

2dly, Thus: As the fifth Number is to the Product of the third and fourth, so is the sixth to the Product made of the first and second, by one Single Direct Proportion.

Arithmetical PROGRESSION.

IS when a Rank or Series of Numbers differ orderly from one another, by some common Number.

To find the Sum of any Arithmetical Progression, add the first and last Numbers together, and multiply that Sum by Half the Number of Places, and that Product is the Sum. But if the Number of Places be odd, multiply the said Number of Places by Half of the first, and last added, and that Product is the Sum.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

What the Sum?

16 Last.

1 First.

17 Sum.

8 Half of the Number of Places.

136 Sum of the Whole.

Suppose a Man hireth a Room for a Year, and agreeth to pay the first Week 5 d. the second Week 9 d. and for the third Week 13 d. so paying every Week 4 d. more, until 52 Weeks, or a Year is finished, I demand what the Rent will come to?

Answer 23 l. 3 s. 8 d.

Here you are to consider, that the common increasing Number is 4 d. so that the last Week must amount to 51 Times 4, added to the Pay of the first Week, which is 5 d. then will the last Week come to 209 Pence; then work as in the Example.

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	51	12) 5564 (463s.
	4	48
Product	<u>204</u>	<u>76</u>
	5	72
Added	<u>209</u> the last Week.	<u>44</u>
	5 the first Week.	36
Added	<u>214</u>	<u>8 d.</u>
	26 Half the Weeks in a Year.	
	<u>1284</u>	210) 4613 (23l. 3s. 8d.
	<u>428</u>	
Pence	<u>5564</u>	

Geometrical Progression.

SUPPOSE one sold 12 Ells of Cloth, to receive for the first Ell 1 d. the second 2 d. the third 4 d. and so doubling, what is paid for the 12 Ells?

0, 1, 2, 3, 4, 5, 6.
1, 2, 4, 8, 16, 32, 64.
32
<u>128</u>
192
<u>2048</u>
2

Answer 4096 Pence.

Note, That if this Question had been for a Farthing a Button, or the like, the Answer would have been Farthings.

Suppose one sold a Horse having 4 Shoes, and in every Shoe 6 Nails, to receive for the first Nail 1 Farthing, the second Nail 2 Farthings, the third Nail a Penny, and so doubling how much is paid for the last Nail, and the Price of the Horse? Answer 17476 l. 5 s.

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0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.
1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, 2048, 4096.

$$\begin{array}{r}
 12288 \\
 18432 \\
 81920 \\
 \hline
 8388608 \\
 2 \\
 \hline
 \text{Farthings } 16777216
 \end{array}$$

Or if this Question had been of a Coat sold at a Barley-Corn a Button, and so doubling to 24 Buttons, (accounting 900 Corns to a Pint) I divide the 16777216 by the 900 Corns, the Quotient gives about 11641 Pints, which divide by 64, (the Pints in a Bushel) the Quotient gives about 292 Bushels, or about 36 Quarters of Barley for the Coat.

The Rule of FELLOWSHIP or COMPANY

MAY be fitly divided into Gain, Loss, and Time.

A General Rule.

As general Stock to general Profit bears,

So each Man's Stock in general Profit shares.

That is to say,

Every Man's particular Stock being added together, the Total must be the first Number in the Rule of Three, the Gains the second, and every Man's particular Stock the third; as,

Suppose two Merchants in Company, A. laid in 20 l. B. laid in 40 l. whereby was gained 50 l. what is each Man's Part of the Gain?

$ \left. \begin{array}{r} A. \ 20 \\ B. \ 40 \\ \hline 60 \end{array} \right\} $	If 60 l. gain 50 l. what will 20 l. gain? $ \begin{array}{r} 20 \\ \hline 60 \mid 100 \mid 0 \text{ (16 l. 13 s. 4 d.)} \\ 6 \\ \hline 40 \\ 36 \\ \hline 4 \end{array} $
---	--

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If 60*l.* gain 50*l.* what will 40*l.* gain?

$$\begin{array}{r}
 40 \\
 \hline
 60 \overline{) 2000} \text{ (33*l.* 6*s.* 8*d.*} \\
 \underline{18} \\
 20 \\
 \underline{18} \\
 2
 \end{array}
 \qquad
 \begin{array}{r}
 \text{l. s. d.} \\
 33 \text{ } 06 \text{ } 8 \\
 16 \text{ } 13 \text{ } 4 \\
 \hline
 \text{Proof } 50 \text{ } - \text{ } -
 \end{array}$$

*Suppose two Merchants made a Stock, A. laid in 45*l.* and B. laid in 68*l.* whereby was gained 32*l.* how must the Gains be divided?*

If 113*l.* gain 32*l.* what will 45*l.* gain?

$$\begin{array}{r}
 \left. \begin{array}{l} A. 45 \\ B. 68 \end{array} \right\} \\
 \hline
 113
 \end{array}
 \qquad
 \begin{array}{r}
 45 \\
 \hline
 160 \\
 128 \\
 \hline
 113 \overline{) 1440} \text{ (12*l.* } \frac{84}{113} \text{ A's Part.} \\
 \underline{113} \\
 310 \\
 \underline{226} \\
 84
 \end{array}$$

If 113*l.* gain 32*l.* what will 68*l.* gain?

$$\begin{array}{r}
 68 \\
 \hline
 256 \\
 192 \\
 \hline
 113 \overline{) 2176} \text{ (19*l.* } \frac{29}{113} \text{ B's Part.} \\
 \underline{113} \\
 1046 \\
 \underline{1017} \\
 29
 \end{array}$$

The 29 of the Fraction multiplied by 240, (the Pence in 20*s.*) and the Product divided by 113, the Quotient tells the Pence.

Suppose

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Suppose three Merchants, A. B. and C. join their Monies to make a Stock of 25000l. of which A. laid in 10000l. B. 8000l. C. 7000l. with this (after a certain Time of Trading) they gained 7500l. how must this be parted?

If 25000l. gain 7500l. what will 10000l. gain ?

$$\begin{array}{r} 10000 \\ \hline 25 \overline{) 000} \quad 75000 \overline{) 000} \quad (3000l. \text{ A's Part.} \\ \underline{75} \\ 00000 \end{array}$$

If 25000l. gain 7500l. what will 8000l. gain ?

$$\begin{array}{r} 8000 \\ \hline 25 \overline{) 000} \quad 60000 \overline{) 000} \quad (2400l. \text{ B's Part.} \\ \underline{50} \\ 100 \\ \underline{100} \\ 0 \end{array}$$

If 25000l. gain 7500l. what will 7000l. gain ?

$$\begin{array}{r} 7000 \\ \hline 25 \overline{) 000} \quad 52500 \overline{) 000} \quad (2100l. \text{ C's Part.} \\ \underline{50} \\ 25 \\ \underline{25} \\ 0 \end{array} \quad \begin{array}{l} A. 3000l. \\ B. 2400l. \\ C. 2100l. \end{array} \left. \vphantom{\begin{array}{l} A. 3000l. \\ B. 2400l. \\ C. 2100l. \end{array}} \right\} \text{Stocks added.}$$

$$\begin{array}{r} \underline{7500} \end{array}$$

Rule of FELLOWSHIP with Time.

The RULE.

EVERY Man's Stock must be multiplied by his Time, and the Total of those Products added together is the first Number, the Gain or Loss the second Number, and the Product of every Man's particular Stock and Time the third Number.

Suppose

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Suppose two Merchants in Company, A. laid in 100 l. for 4 Months; B. put in 136 l. for three Months, and they gained 50 l. what is each Man's Part?

$$\begin{array}{l} A. \text{ put in } 100 l. \\ B. \text{ put in } 136 l. \end{array} \left. \vphantom{\begin{array}{l} A. \text{ put in } 100 l. \\ B. \text{ put in } 136 l. \end{array}} \right\} \text{ Multiplied by } \left\{ \begin{array}{c} 4 \\ 3 \end{array} \right\} \text{ give } \left\{ \begin{array}{c} 400 \\ 408 \end{array} \right\}$$

808

If 808 l. gain 50 l. what will 400 l. gain?

$$\begin{array}{r} 808 \text{) } 20000 \text{ (24 l. } \frac{608}{808} \text{ A's Part.} \\ \underline{1616} \\ 3840 \\ \underline{3232} \\ 608 \end{array}$$

If 808 l. gain 50 l. what will 408 l. gain?

$$\begin{array}{r} 408 \\ \underline{\quad} \\ 400 \\ 2000 \\ \underline{\quad} \\ 808 \text{) } 20400 \text{ (25 l. } \frac{200}{808} \text{ B's Part.} \\ \underline{1616} \\ 4240 \\ \underline{4040} \\ 200 \end{array}$$

Suppose three Butchers, as A. B. and C. held a Pasture, for which they pay 45 l. per Annum, A. hath 24 Oxen 32 Days, B. hath 12 there 48 Days, and C 16 Oxen there 24 Days, what must every Man pay of the Rent?

Oxen.	Days.	
A. 24	32	$\left. \vphantom{\begin{array}{l} A. 24 \\ B. 12 \\ C. 16 \end{array}} \right\} \text{ Multiplied by } \left\{ \begin{array}{c} 32 \\ 48 \\ 24 \end{array} \right\} \text{ give } \left\{ \begin{array}{c} 768 \\ 576 \\ 384 \end{array} \right\}$
B. 12	48	
C. 16	24	
		1728

If 1728 l . give 45 l . what will 768 l . give?

$$\begin{array}{r}
 1728) \ 34560 \ (20\text{.} \\
 \underline{3456} \\
 00
 \end{array}
 \qquad
 \begin{array}{r}
 45 \\
 \underline{} \\
 3840 \\
 \underline{3072} \\
 34560
 \end{array}$$

A. pays 20 l . of the Rent.

B. pays 15 l . C. pays 10 l . which makes 45 l .

Of FRACTIONS.

Notation and Numeration of Vulgar Fractions.

A FRACTION is one or more Parts of an Unit or Integer, according as the same is divided.

Every Fraction consisteth of two Parts, *viz.* a Numerator, and a Denominator.

The Denominator is placed (in Writing) below the Line you write in, and sheweth how many Parts the Integer, or Unit, is divided into.

The Numerator of a Fraction is (in Writing) placed above the Line, and sheweth how many of the said Parts, expressed by the Denominator, are contained in the Fraction. For Instance:

$\frac{3}{4}$ Numerator.
 $\frac{3}{4}$ Denominator.

In reading Fractions, the Numerator is first mentioned, then the Denominator; as the Fraction above is read, three fourth Parts of any Thing; *i. e.* the Denominator sheweth, that the Integer is divided into four Parts; and the Numerator, that three of those fourth Parts are contained in the Fraction. So by the same Reason,

$\frac{1}{4}$ is one fourth Part,

$\frac{1}{2}$ is one Half, or two fourth Parts,

$\frac{2}{3}$ is two third Parts,

$\frac{5}{6}$ is five sixth Parts, &c. as in the following Table.

One Half, &c. is $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{6}, \frac{1}{7}, \frac{1}{8}, \frac{1}{9}, \frac{1}{10}$.

Two Thirds, &c. is $\frac{2}{3}, \frac{2}{4}, \frac{2}{5}, \frac{2}{6}, \frac{2}{7}, \frac{2}{8}, \frac{2}{9}, \frac{2}{10}$.

Three Fourths, &c. is $\frac{3}{4}, \frac{3}{5}, \frac{3}{6}, \frac{3}{7}, \frac{3}{8}, \frac{3}{9}, \frac{3}{10}$.

Four Fifths, &c. is $\frac{4}{5}, \frac{4}{6}, \frac{4}{7}, \frac{4}{8}, \frac{4}{9}, \frac{4}{10}$.

Five Sixths, &c. is $\frac{5}{6}, \frac{5}{7}, \frac{5}{8}, \frac{5}{9}, \frac{5}{10}$.

Six

to fit and prepare Fractions for Additions, Subtraction, &c.
Case.] When a mixt Number is given to be reduced to an improper Fraction.

Rule.] Multiply the Integers by the Denominator of the Fraction, and to the Product add the Numerator, and place the Sum over the Denominator for a new Fraction.

Example. Reduce $12 \frac{3}{4}$ to an improper Fraction. $12 \frac{3}{4}$
 See the Marginal Operation.

Answer $5 \frac{1}{4}$

The Reason of this Rule.

If the Numerator and Denominator of a Fraction be like, the Value thereof must be an Unit; so that if you assign a Denominator to any whole Number that shall be reduced to an improper Fraction, your Numerator must be the Product of the whole Number by that Denominator. This 1 being reduced to such a Fraction, whose Denominator is 2; 2 Times 1 is the Numerator, and 2 the Denominator, which is $\frac{2}{2}$ (or 1;) because the Unit is divided into two Parts, and there are two of those Parts in the Fraction; and as many Units as there are in the integral Parts, so many Times the Denominator must the Numerator be; because 1 is $\frac{2}{2}$, 2 is $\frac{4}{2}$, &c. which Numerator made of the integral Part of the mixt Number, must be added to the Numerator of the fractional Part, for the Reason mentioned in Addition of Vulgar Fractions.

Case.] When an improper Fraction is given to be reduced to a whole or mixt Number.

Rule.] Divide the Numerator of the Fraction by the Denominator, and the Quotient is a whole Number; and if any Thing remains, it must be placed over the Divisor.

Example. Reduce $5 \frac{1}{4}$ to a whole or mixt Number.

4) 51 ($12 \frac{3}{4}$ Answer, which proves the last Case.

$$\begin{array}{r} \cdot \cdot \\ \hline 11 \\ \hline \end{array}$$

3 Remains.

The Reason of this Rule is,

That so often as the Denominator can be had in the Numerator, so many Units doth the Fraction contain; for $\frac{2}{2}$ is

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is 1, $\frac{4}{2}$ is 2, $\frac{6}{2}$ is 3; so that $\frac{7}{2}$ must be $3\frac{1}{2}$, because 2 can be had 3 Times in 7, and 1 remains, which must be $\frac{1}{2}$, because 1 is Half of 2, and $\frac{2}{2}$, as I said before, is a Unit or One.

Case.] When Fractions have different Denominators, and are to be reduced to a common Denominator.

Rule.] Multiply the Numerator of each Fraction singly into all the Denominators of each Fraction given, excepting its own, and the Product is a new Numerator; and then multiply all the Denominators one in another, the Product is a common Denominator.

Example. Reduce $\frac{2}{3}$, $\frac{3}{4}$, and $\frac{5}{7}$, to a common Denominator.

First.

Thirdly,

3 Numerator of the 2d.	5 Numerator of the 3d.
3 Denominator of the 1st.	4 Denominator of the 2d.

9 Product.	20 Product.
7 Denominator of the 3d.	3 Denominator of the 1st.

63 Second new Numerator.	60 Third new Numerator.
--------------------------	-------------------------

Secondly.

Lastly.

2 First Numerator.	3 } Multiply.	} Denominators.
4 Second Denominator.	4 }	
8 Product	} Mult.	}
7 Third Denom.		
	7 }	

56 First new Numerator.	84 Common Denominator.
-------------------------	------------------------

Now if you place each new Numerator over the common Denominator, you will have

$\frac{56}{84}$	} Equivalent to	$\frac{2}{3}$ The first Fraction given.
$\frac{63}{84}$		$\frac{3}{4}$ The second Fraction.
$\frac{60}{84}$		$\frac{5}{7}$ The third Fraction.

The Reason of this Rule.

Since the End of this Rule is to make the Denominators alike, and the Numerators proportioned thereto, as the given are in Proportion: If therefore the Denominators are multiplied by any Numbers that will make the Products alike, and if the respective Numerator be multiplied by the same Number you multiplied its Denominator, it will produce the same Thing as this Rule produceth: As, if I would

reduce $\frac{2}{3}$ and $\frac{3}{4}$ to a common Denominator; if I multiply the Denominator 3 by 8, and the Denominator 4 by 6, the Products will be each 24 for a common Denominator; and if the Numerator 2 be multiplied by the said 8, and the 3 by the 6, the Products will be 16 and 18; so the Fractions in a common Denominator are $\frac{16}{24}$ and $\frac{18}{24}$, equal to $\frac{8}{12}$ and $\frac{9}{12}$, which would have been produced by the foregoing Rule. But since it would, in some Cases, be tedious to find out Numbers, that, multiplying the several Denominators, would produce a common Denominator, it is therefore the most certain Way of performing the same, to multiply the Denominators one in another, for a common Denominator, as in the Instance last above, of $\frac{2}{3}$ and $\frac{3}{4}$, the 3 by the 4, and the 4 by the 3, must produce each 12 for a common Denominator; and if you multiply, as before, each Numerator by the Number you multiplied its Denominator, the Products are new Numerators, proportioned to the common Denominator, as the several Numerators given are proportioned to their respective Denominators.

Case.] To reduce a Fraction into its lowest Terms.

Rule.] Take $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{4}$, &c. of the Numerator and Denominator.

Example. Reduce $\frac{56}{84}$ to its lowest Terms.

Say, Half of 56 is 28, and $\frac{1}{2}$ of 84 is 42; the $\frac{1}{2}$ of 28 is 14, and $\frac{1}{2}$ of 42 is 21; and because you cannot take half $\frac{1}{2}$, make Trial if you can take $\frac{1}{3}$, &c. but since you can only take $\frac{1}{7}$ of both, say, the 7's in 14 is 2, and the 7's in 21 is 3; so is the given Fraction equivalent to $\frac{2}{3}$, and proves the last Fraction in the last Case to be right. See the Work.

$\frac{56}{84}$ or $\frac{28}{42}$ or $\frac{14}{21}$ or $\frac{2}{3}$
Take $\frac{1}{2}$ Take $\frac{1}{2}$ Take $\frac{1}{7}$ Lowest
Term.

The Reason of the last Rule.

By the Lemma to the 26th Prop. of the 5th Book of Euclid's Elem. two Numbers, however different, if they are divided by one and the same Number, the Quotients will have like Proportion one to another, as the Numbers given to be divided have to each other: As $\frac{1000}{1000}$ equal to $\frac{1}{1}$

$\frac{1}{10}$; because, if 100 the Numerator be divided by 100, the Quotient is 1; and 1000 the Denominator divided by 100 the Quotient is 10; which is equal to $\frac{1000}{10000}$; because, 100 is to 1000, so is 1 to 10; for $100 \times 10 = 1000 \times 1$.

There are other Rules for the performing the Working of the last Case, but none so proper for a young Man's Practice as the foregoing.

Case.] To reduce a compound Fraction to a simple one equivalent to the Compound.

Rule.] Multiply all the Numerators one in another, for the Numerator of the Answer, and the Denominators one in another, for that of the Answer.

Example. Reduce $\frac{1}{4}$ of $\frac{1}{12}$ of $\frac{1}{20}$ into a simple Fraction.

The Product of the Denominators 4, 12, and 20, is 960 and the Product of 1, 1, and 1 is 1; so the simple Fraction sought for is $\frac{1}{960}$.

The Reason of the last Rule.

By the Definition of a compound Fraction aforesaid, is shewed, that such a Fraction is nothing but the Subdivision of the Parts of an Unit; where, for Instance, you have a Line supposed an Unit divided into 5 Parts, which represents the Denominator of that Part of a compound Fraction always next the Right-hand in the reading thereof; each of which 5 Parts being again divided into 4 Parts a is the Denominator of that Part of a compound Fraction next the Left-hand; each of which Parts being $\frac{1}{4}$ of $\frac{1}{5}$ of the Unit, (or whole Line) shews that there are 20 such Parts as that 4th, in the Line; which is the Reason why we always multiply the Denominators together, (as 4 and 5) to reduce the Fraction of a Fraction into the Fraction of a Unit, or a Compound to a Simple, which is all one. And the Reason of multiplying the Numerators together, (as $\frac{3}{4}$ of $\frac{2}{5}$ of the last foregoing Line, Page 210) is because $\frac{3}{4}$ of $\frac{2}{5}$ (as rn) is but one Half of $\frac{3}{4}$ of $\frac{2}{5}$; therefore $\frac{3}{4}$ of $\frac{2}{5}$ must be 2 Times (rn) equal to (rb) or $\frac{6}{20}$ of the Line (rs) for that which before the Subdivision of the Line was $\frac{3}{4}$ is (now the whole Line is divided into 20) $\frac{3}{4}$, so that $\frac{3}{4}$ of $\frac{2}{5}$ is equal to $\frac{3}{20}$, and consequently 2 Times $\frac{3}{20}$ is $\frac{6}{20}$ which plainly shews, why the Denominators of compound Fractions are multiplied together for that of a single Fraction, and the Numerators are likewise multiplied together for the Numerator of the same Fraction.

Case]

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Case.] To find the Value of any Fraction, whether the same be of Coin, Measure, Weight, &c.

Rule.] Multiply the Numerator of the Fraction by such a Number of Units of the next inferior Denomination, as is equal to an Unit of the Denomination the Fraction is Part of, and divide the Product by the Denominator, so the Quotient will answer your Question; but if any Thing remain, reduce that to the next lower Denomination, and divide as before.

Example. What is the Value of $\frac{134}{146}$ of a Hundred Weight?
See the Operation.

134 Hundred. }
4 Quarters in a Hundred. } Multiply.

146) 536 (3 Quarters of a Hundred.
438

98 Quarters remain. }
28 Pounds in a Quarter. } Multiply.

784
196

146) 2744 (18 Pounds.
146

1284
1168

116 Pounds remain }
16 Ounces in a Pound. } Multiply.

696
116

146) 1856 (12 Ounces.
146

396
292

104 Ounces remain. }
16 Drams in an Ounce. } Multiply.

624
104

146) 1664 (11 Drams $\frac{58}{146}$.

146
204
146

Q. lb. oz. dr.
Answer 3 18 12 11 $\frac{1585}{2404}$

58

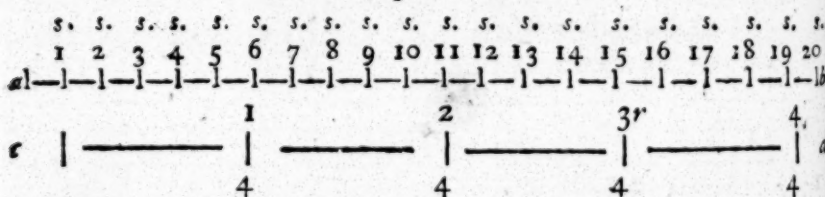
The

The Reason of this Rule.

The Reason of this Rule is plain ; for suppose a Line, divided into 20 Parts, the whole Line, as (*ab*) will represent 1 Pound, and the 20 Parts, 20 Shillings. Now suppose there is a Fraction given, of which you will find the Value, as $\frac{3}{4}$ of a Pound Sterling ; draw another Right Line of the same Length with the former, and parallel thereto, as (*cd*) which divide (according to the Definition of a Fraction) into 4 Parts, to represent your Denominator ; and right against 3 of those Parts in this Line shall stand 15 in the Line of Shillings ; which shews, that $\frac{3}{4}$ of a Pound Sterling is 15 s. and the same may be said of any other Fraction ; for as 4 (the whole Line *cd*, or Denominator of the Fraction given) is in Proportion to 20s. (the whole Line *ab*;) so is 3 the Numerator or Number of Parts in the Fraction given, as in the lower Line (*cr*) to 15s. the Value of the said Fraction given : And therefore do you multiply and divide as in the last Rule directed for.

Denom.	s.	Numer.	s.
4	20	3	15
	3		

4) 60 (15s. Answer.



Cas.] To reduce Fractions of a lower Denomination to a higher.

Rule.] Consider what Denomination your Fraction is of, and how many of that make a Unit of the next, &c. to the Denomination you would have your Fraction reduced to ; then work as in the fifth Case of this Chapter.

Example. Reduce $\frac{1}{5}$ of an Ounce of Averdupois into the Fraction of an Hundred Weight.

Ratio.] 16 Ounces being 1 Pound, $\frac{1}{5}$ of an Ounce is $\frac{1}{80}$ of a Pound ; then I consider that 28 Pounds is a Quarter of a Hundred, and that 4 Quarters is one Hundred

dred ; therefore $\frac{1}{3}$ of an Ounce is $\frac{1}{3}$ of $\frac{1}{10}$ of $\frac{1}{28}$ of $\frac{1}{4}$ of a Hundred ; which is $\frac{1}{8960}$ of a Hundred.

Case.] When you would reduce a Fraction of a higher to a Fraction of a lower Denomination.

Rule.] Reduce the Numerator of the Fraction into that Denomination you would have your Fraction of, and place it over the Denominator given for a new Fraction.

Example. Reduce $\frac{1}{8960}$ of a Hundred into a Fraction of an Ounce.

112 Pounds. } Multiply.
16 Ounces in a Pound.

672
112

Product 1792 Ounces in the Numerator: So the Answer is $\frac{1792}{8960}$; which Fraction in its lowest Term is $\frac{1}{5}$, and proves the last Case. See the Work.

$\frac{1792}{8960}$, $\frac{896}{4480}$, $\frac{448}{2240}$, $\frac{112}{560}$, $\frac{56}{280}$, $\frac{8}{40}$, $\frac{1}{5}$
Take Take Take Take Take Take
 $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

Proof, or more brief, by dividing the first by 1792.

Ratio.] The Reason of this Rule is grounded upon that of a foregoing Case, omitting Division by the Denominator; for in 1 C. or 112 lb. are 1792 Ounces ; now, supposing the Denominator 1792 $\frac{1}{1792}$ of a C. is just $\frac{1792}{8960}$ of an Ounce, or 1 oz. So, by the same Reason, the Hundred being, as in the Example, divided into 8960 Parts, each Part must be less than an Ounce; and to know therefore how much less, or what Part of an Ounce the said $\frac{1792}{8960}$ is, is no more than to see how many Times 1792 is contained in 8960; for how much soever 1792 is less than 8960, so much must the Fraction want of being an Unit (as here of 1 Ounce) by the Reason of the foregoing Rules: So that 1792 being but $\frac{1}{5}$ of 8960, it follows, that $\frac{1792}{8960}$ is but $\frac{1}{5}$ of an Ounce.

Addition.

Case.] When a simple Fraction is to be added to a simple.

Rule.] If the Fractions are not in a common Denominator, reduce them to one by the Case foregoing; then add the

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the Numerators together, and divide the Sum by the common Denominator, and the Quotient is the Sum required; and if any Thing remain, place it over the Divisor.

Example. To $\frac{2}{3}$ add $\frac{5}{6}$.

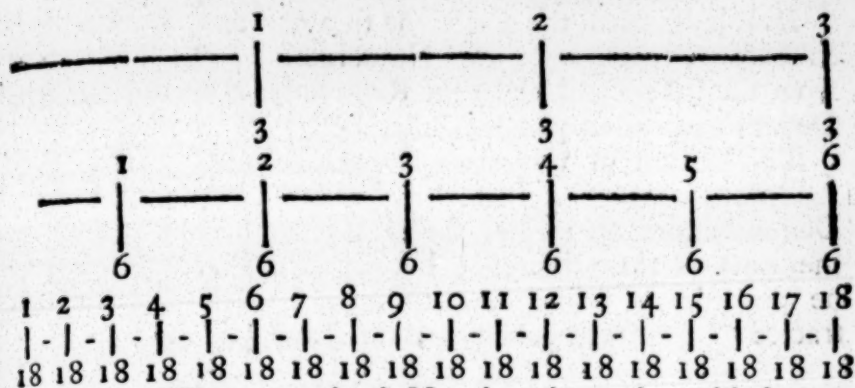
The Fractions in a common Denominator are,

$\frac{12}{18}$ $\frac{15}{18}$
12 The first Numerator,
15 The Second.

27 The Sum, which divided by 18 is 1,
 $\frac{9}{18}$ or $\frac{1}{2}$ for Answer.

The Reason of the foregoing Rule.

The Reason why you are first to reduce your Fractions to a common Denominator, before you can know their total Sum, is, because the Aggregate of most Fractions could not otherwise be discovered; for a Fraction is more or less, according as the Numerator is more or less in Proportion to it's Denominator; so the Numerators are only to be added. Now suppose, as the foregoing Example, that $\frac{2}{3}$ is to be added to $\frac{5}{6}$; in one of these Fractions the Unit is divided into 6 Parts, and in the other into 3 Parts; now, if I should add the Numerators together, they make 7; but of which of these Parts it is not known: But if the Fractions are reduced to a common Denominator, their Numerators will still retain the same Proportion to their Denominators; and when the Unit is divided in both Fractions into a like Number of Parts, the Sum of those Parts contained in each Fraction is the true Aggregate of both Fractions; so $\frac{1}{3}$ and $\frac{2}{4}$ is $\frac{3}{4}$, $\frac{7}{12}$ and $\frac{1}{12}$ is $\frac{8}{12}$: Or as in the three Lines following, which are of equal Length, and supposed each an Unit; the 1st divided into 3, and the 2d into 6 Parts, are the Denominators given, and the 3d Line is divided into 18 Parts, the Product of 3 and 6, which is the common Denominator; where right against $\frac{2}{3}$, in the uppermost Line, you have $\frac{12}{18}$ in the lowest Line; and against $\frac{5}{6}$ in the 2d Line you have $\frac{15}{18}$ in the lowest; which shews plainly, that $\frac{2}{3}$ is $\frac{12}{18}$, and $\frac{5}{6}$ is $\frac{15}{18}$: Now the Sum of 12, and 15 Parts of the lowest Line, is $\frac{27}{18}$, or one whole Line and a Half, as by Example.



Case.] When a mixed Number is to be added to a mixed.

Rule.] Work with the fractional Parts as before, and afterwards add the Sum of the Fractions to the Sum of the Integers, and you have your Desire.

Example. To $1\frac{1}{2}$ add $74\frac{3}{5}$.

The Sum of the Fractions by the last Case is $1\frac{7}{10}$, which added to 1 and 74 makes $76\frac{1}{10}$.

$$76\frac{1}{10}$$

$$\left. \begin{array}{r} 1\frac{1}{10} \\ 1 \end{array} \right\} \text{Add}$$

$$74$$

$$76\frac{1}{10} \text{ the Sum required.}$$

Or you may perform the Work, by reducing the given Numbers to improper Fractions; and so proceeding as formerly directed.

Case.] When a compound Fraction is to be added to a simple one.

Rule.] Reduce the compound Fraction to a simple one, by your former Directions; then find out the Sum.

Example. To $\frac{1}{4}\frac{3}{4}$ add $\frac{3}{8}$ of $\frac{2}{3}$.

The compound Fractions reduced to a simple one is,

$$\frac{6}{24} \text{ or } \frac{1}{4}$$

The common Denominator of $\frac{1}{4}$ and $\frac{1}{42}$, is as followeth,

$$\frac{42}{168} \text{ and } \frac{60}{168}$$

The Sum of the Numerators is 102, so that $\frac{102}{168}$ is the Answer.

Subtraction.

Case.] When a single Fraction is to be deducted from a

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Rule.]

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Rule.] Reduce the Fractions to a common Denominator as before; then take the Numerator of the Subtrahend from the other, and place the Remainder over the common Denominator, and you have the Difference sought.

The Reason of this Rule is plain from what was said of Addition, as to the common Denominators; and if the Denominators are alike, the Difference between their Numerators is the Difference between the Fractions; as may be proved, by adding that Difference to the Fraction subtracted; as, $\frac{1}{4}$ from $\frac{3}{4}$, rests $\frac{2}{4}$; for $\frac{2}{4}$ and $\frac{1}{4}$ is $\frac{3}{4}$.

Example. From $\frac{3}{4}$ take $\frac{5}{8}$. See the Work.
 36 the first Numerator. 48 the common Denominator,
 20 the second Numerator.

16 Difference. Answer $\frac{16}{48}$ or $\frac{1}{3}$.

Case.] When a compound Fraction is to be deducted from a simple Fraction.

Rule.] Reduce the compound Fraction to a simple one, and then work as in the last Case.

Example. From $\frac{13}{14}$ take $\frac{2}{3}$ of $\frac{8}{9}$.

The compound Fraction reduced to a simple is, $\frac{16}{27}$.

13	16	27
27	14	14
91	64	108
26	16	27

351 the 1st Num. 224 the 2d Num. 378 the com. D.
 224 deduct.

So the Answer is $\frac{127}{378}$.

127 Remains.

Case.] When a simple Fraction is to be deducted from a whole Number.

Rule.] Deduct the Numerator from the Denominator, and place the Remainder over the Denominator; then deduct 1 from the Integer, and place the Remainder before the remaining Fraction, and you have your Answer.

Example. From 12 take $\frac{5}{8}$. The Answer is $11\frac{3}{8}$.

Or thus:

According to the Rules foregoing, place 1 under the 12, and

and so proceed, as in the last Case but two; but the first Way is the briefer.

Note, That the 1 borrowed from the 12 (in the first Method) is $\frac{2}{8}$; so that if from $\frac{8}{8}$ you take $\frac{2}{8}$, there rests $\frac{6}{8}$.

Multiplication.

Case.] When you are to multiply a simple Fraction by a simple one.

Rule.] Multiply all the Numerators one in another, for the Numerator of the Product, and likewise the Denominators for the Denominator of the Product.

Example. Multiply $\frac{1}{2}$ by $\frac{2}{3}$. Answer $\frac{2}{6}$ or $\frac{1}{3}$.

The Reason of Multiplication of Fractions.

The Effect of Multiplication of Fractions is different from that of whole Numbers; for the Product is always less than the Multiplicand, though it is always greater in the whole Numbers; the former being the multiplying of the Parts into which an Unit is divided; which must needs make the Parts produced less than those given; the latter multiplying Units, must needs augment the Number; the former decreasing the Parts of an Unit to infinite Littleness; the latter augmenting the Number of Units *ad Infinitum*. Now the Reason of the Rule is, That if any Fraction be multiplied by 1, it produces the Fraction given; if by $\frac{1}{2}$, it produceth $\frac{1}{2}$ the Fraction given, &c. So that to multiply $\frac{3}{4}$ by $\frac{2}{3}$, produceth $\frac{2}{3}$ of $\frac{3}{4}$, or $\frac{6}{12}$, or $\frac{1}{2}$, which is fully explained in the Reason of the Rule.

Case.] When you multiply a whole Number by a Fraction.

Rule.] Multiply the Integer by the Numerator of the Fraction, and the Product placed over the Denominator is the Answer; which differeth nothing from the last Case, if you put an Unit under the integral Part, making it like a Fraction.

Example. Multiply 126 by $\frac{3}{7}$. Answer $3\frac{7}{7}$ or 54.

Case.] When you multiply a simple by a compound Fraction.

Rule.] Reduce the compound Fraction into a simple one, and work as in the last Case but one.

Example. Multiply $\frac{1}{2}$ by $\frac{3}{4}$ of $\frac{3}{4}$. Answer $\frac{3}{8}$ or $\frac{3}{8}$.

Division.

Case.] When you would divide a simple Fraction by a simple one.

Rule.] Having placed the Dividend and Divisor, as in the whole Numbers, multiply the Numerator of the Divisor, into the Denominator of the Dividend, for the Denominator of the Quotient: And the Denominator of the Divisor, into the Numerator of the Dividend, for the Numerator of the Quotient.

Example. Divide $\frac{1\frac{1}{2}}{1\frac{1}{2}}$ by $\frac{1}{2}$. ($\frac{1}{2} \frac{1\frac{1}{2}}{1\frac{1}{2}} \frac{2\frac{2}{2}}{1\frac{1}{2}}$ or $1\frac{1}{2}$.)

The Reason of this Rule.

1. To make a Fraction greater in Value, is nothing but to multiply, or add, to it's Numerator, or to divide or take from it's Denominator.

2. To make a Fraction less, is to multiply, or add to, it's Denominator, or to divide, or take from, it's Numerator.

3. Upon these two Axioms the Reason of the Rule given for Division of Vulgar Fractions will appear. Suppose, for Instance, $\frac{3}{4}$ is to be divided by $\frac{1}{4}$; if it were divided by 1, the Quotient would be $\frac{3}{1}$; and therefore, since it is to be divided by a Quarter of 1, the Quotient will be 4 Times $\frac{3}{1}$.

4. For both in Fractions and whole Numbers, by how much less the Value of the Divisor is, by so much more will that of the Quotient be; which is, therefore, in this Example, according to the first Axiom $\frac{1\frac{2}{2}}{1\frac{2}{2}}$; and shews plainly, why the Numerator of the Dividend is multiplied by the Denominator of the Divisor to produce the Numerator of the Quotient; whose Denominator is always the same with the Dividend, so often as 1 is the Numerator of the Divisor.

5. But if the $\frac{3}{1}$ be divided by $\frac{3}{4}$, then the Quotient will (by the 4th Step) be but a 3d of the last Quote, viz. of $\frac{1\frac{2}{2}}{1\frac{2}{2}}$, because $\frac{3}{4}$ (this Divisor) is three Times as much as the Divisor $\frac{1}{4}$.

6. The most natural Way, therefore, to divide by $\frac{3}{4}$, is to take a 3d of the Numerator of the Quotient arising from dividing the same Fraction by $\frac{1}{4}$, which is $\frac{1\frac{2}{2}}{1\frac{2}{2}}$, according to the second Axiom.

7. But because it would often happen that the Numerator of the Quotient cannot be divided by the Numerator of

of the Divisor without a Remainder, which would be more troublesome and less exact; it is therefore more practicable (since it produceth the same Thing by the second Axiom) to multiply the Denominator of the Dividend by the Number you should have divided the Numerator of the Quotient, which in this Instance of $\frac{3}{4}$ by $\frac{3}{4}$ is 4 by 3, which produceth 42; so the Answer is $\frac{12}{4}$ or $\frac{3}{1}$, the same as by the 6th Step; and plainly shews the Reason why the Denominator of the Dividend is multiplied by the Numerator of the Divisor, to produce the Denominator in the Quotient.

Case.] When you divide a whole Number by a Fraction.

Rule.] Place an Unit under the whole Number, and work as in the last.

Example. Divide 54 by $\frac{3}{7}$. See the Operation.

$$\frac{3}{7} \overline{) 54 \frac{1}{1}} \quad (\frac{378}{3} \text{ Answer, or } 126.$$

Case.] When you divide a simple Fraction by a compound Fraction.

Rule.] Reduce the compound to a simple Fraction, and work as in the last Case but one.

Example. Divide $\frac{30}{133}$ by $\frac{5}{9}$ of $\frac{3}{7}$. The Compound Fraction is $\frac{15}{63}$,

$$\frac{15}{63} \overline{) \frac{50}{133}} \text{ by } \frac{1890}{10995} \text{ or } \frac{18}{9}.$$

Having in the two last Rules shewed the Way of multiplying and dividing Fractions, it would be needless to say any Thing of the Golden Rule, since there is nothing in it but what has been already done, observing only to multiply and divide by the fractional Way instead of whole Numbers.

Reduction of Decimal Fractions.

A Decimal Fraction is only different from a Vulgar in this: That the Denominator of a Decimal Fraction is either 10, or some Power of 10, viz. 100, 1000, 10000, &c. so that the Denominator is easily known without expressing it; for in a Decimal Fraction there is a Point or Prick toward the Left-hand of the Numerator; which Point always possesses the like Place, as the first Figure toward the Left-hand would, if it were to be wrote down: Thus $\frac{1}{10}$ is .1, the Prick being in the Ten's Place and, therefore, denotes the Denominator to be 10, $\frac{12}{100}$ is .12; $\frac{125}{1000}$ is .125; $\frac{1964}{10000}$ is .1964, &c.

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The Manner to reduce a Vulgar Fraction to a Decimal, is by this Proportion.

Rule.] As the Denominator of the Vulgar Fraction given is in Proportion to it's Numerator :

So is 1000,

To the Numerator of the Decimal whose Denominator is 1000 ;

Or, so is 10000 the Decimal, whose Denominator is 10000, &c.

Example. What is $\frac{1}{8}$ in a Decimal Fraction? See the Operation.

$$8 : 1 :: 1000$$

1

$$8 \overline{) 1000}$$

125 Answer.

But because it sometimes happens that a Cypher more is to possess the 1, 2, &c. place the Decimal towards the Left-hand, therefore take this

Rule.] As many Cyphers as you have in the third Number of the 3 in Proportion, as above, so many Places must you prick off in the Quotient toward the Right-hand.

Example. How is 9d expressed in the Decimal of a Pound sterling?

Rule.] Consider, that in a Pound there are 240 Pence; therefore 9d is $\frac{9}{240}$ in a Vulgar Fraction; for 9d is $\frac{9}{12}$ of $\frac{1}{20}$ of a Pound.

Then say as the last Example,

$$240 : 9 :: 10000$$

9

$$24 \overline{) 0} 9000 \overline{) 0} \text{ (.0375 Answer.}$$

.180

.120

0 Remains.

In this Example, because I had 4 Cyphers in the third Number,

Number, therefore I must prick 4 Places off toward the Right-hand of the Quotient for Decimals; but because the said Quotient did but consist of 3 Places, therefore I supply the fourth to the Left-hand with a Cypher.

Note, That the greater your third Number is, the nearer do you bring your Decimal to Truth, when any Thing happens to remain, as in the Example following; but in most Cafes where the Decimal is not to be multiplied by a great Number, it is fufficient that the fourth Number be 1000.

But when you reduce $\frac{1}{4}$ or $\frac{1}{2}$ or $\frac{3}{4}$ to Decimals, or any Number of Shillings to the Decimal of a Pound, it is sufficient in these Cases if your third Number be 100.

Example. How is 3 Farthings wrought in the Decimal Fraction of a Pound sterling?

$$960 : 3 :: 100000$$

Work, as in the Margin,
by the Rules given in the
last Example, and you will
find the Answer to be
.003125, or 3125 Hund.
Thousand Parts of a Pound.

$$\begin{array}{r} 3 \\ 960 \overline{) 300000} (.003125) \\ \underline{120} \\ 240 \\ \underline{480} \end{array}$$

Example. How is 12 Pound expressed in the Decimal of 112, or one Hundred Grains Weight?

The Vulgar Fraction by the last Example is $\frac{12}{100}$ Hundred, therefore the Decimal is 1071, as followeth:

112 : 12 : : 10009

$$\begin{array}{r} 12 \\ \hline 112 \cdot 120000 (.1071) \\ \hline 800 \\ \hline 160 \end{array}$$

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Example.

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Example. *How is 13 Shillings in the Decimal of a Pound?*
In a Vulgar Fraction 13 Shillings is $\frac{13}{20}$ l. and in a Decimal .65 l.

$$20 : 13 :: 100$$

13

$$20 \overline{) 1300} \text{ (.65 Answer.}$$

110

0 Remains.

Example. *What is 14 s. 6 d. in the Decimal of a Pound?*
In 14 s. 6 d. are 174 d. and the Decimal (by the second Example) is .725 l. for

$$240 : 174 :: 1000$$

174

$$240 \overline{) 174000} \text{ (.725 l. Answer.}$$

600

1200

0 Remains.

Note, That you may, by the Rule following, write down any Number of Shillings in the Decimal of a Pound, without any Proportion.

Rule.] If your Shillings are an even Number, half of them is the Decimal of a Pound.

Thus 14s. is .7 l. 16s. is .8 l. &c. Likewise 13 s. or 130 is .65 l. 15 s. or 150 is .75 l. &c.

You may likewise write down any Number of Pence or Farthings in the Decimal of a Pound, without working by the foregoing Rules.

For if you reduce the given Pence into Farthings, and place a Cypher to the Left-hand, you have the Decimal of a Pound required; but if the said Farthings exceed 14, you may add one (for Reasons given in the next Case) and another for each 39 Farthings.

Thus 3d. is .012 l. 9d. is .037 l. 11d. is .046 l. &c.

Case.] When it is required to find the Value of any Decimal.

Rule.]

Rule.] Multiply the Decimal given, by such a Number of Units of the next inferior Denomination, as make an Unit of that your Decimal is found of, and prick from the Right-hand of the Product so many Places as your Decimal consisteth of: So those towards the Left-hand of the said Point or Prick are Integers; and those to the Right-hand of it, are Parts of an Unit of those Integers.

Example. *What is the Value of .1071 of a Hundred?*
See the Operation.

.1071 Hundred. } Multiply.
4 Quarters in a Hundred.

.4284 Quarters of a Hundred. } Multiply.
28 Pounds in a Quarter.

34272
8568

£. 11 .9952 Parts of a Pound.

Note, That if you consider the Denominator of your Decimal to be 1000, you will find this Way of discovering the Value of a Decimal Fraction to differ nothing from that of a Vulgar Fraction, because, by cutting off .9952, you divide 11 .9952 by the Denominator.

In the last Example you see, that the Value of .1071 Hundred is 11 Pounds; and the Parts being another Pound wanting less than a hundred Parts of an Unit, you may call the Value 12 Pounds. And,

Note, That as often as the Decimal (as in the last Example preceding) is above .75, in the lowest Denomination, you may call it an Unit.

Example. *What is the Value of .747 of a Pound Troy?*
See the Work.

747 Parts of a Pound. } Multiply.
12 Ounces in a Pound.

1494
747

Ounces 8.964 Parts of an Ounce.

Ounces

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Ounces 8.964 Parts of an Ounce. } Multiply.
20 Pennyweights in 1 oz.

Penny-wts. 19.280 Parts of a Penny-weight } Multiply.
24 Grains in 1 pwt.

112
56

Grains 6.720 Parts of a Grain.

So that by the Operation you may perceive, that the Value of .747lb. is 8 Ounces, 19 Penny-weights, 6 Grains, and about $\frac{3}{4}$ of a Grain.

Example. *What is the Value of .9184 of a Pound sterling?* Answer, 18s. 4d. 19.

.9184 Parts of a Pound. } Multiply.
20 Shillings in a Pound.

Shillings 18.3680 Parts of a Shilling. } Multiply.
12 Pence in a Shilling,

.7360
3680

Pence 4.4160 Parts of a Penny. } Multiply.
4 Farthings in 1 Penny.

Farthings 1.6640 Parts of a Farthing.

Note, That the Value of a Decimal Pound, as in the last Example, may be found by Inspection, by this

Rule.] Double the Figure standing next the Pound in the Decimal given, and if the next Figure towards the Right-hand of the aforesaid Figure, is 5 or more, add 1 to the Product: Then what Figure stands in the second Place, above or under 5, reckon so many Tens of Farthings; and what stands in the third Place from the Point is so many Farthings; which, as often as they are above 13, make less by 1, or above 39, less by 2. So .347l. is 6s. 11 $\frac{1}{4}$ s. 3c.

The Reason of this Rule.

That Place in a Decimal Fraction next the Prick, is called in *Primes*, being so many tenth Parts of a Pound: Now

Now $\frac{1}{10}$ of a Pound being 2 Shillings; therefore whatever Figure possesseth that Place, must be multiplied by 2.

The Reason why you add 1 to the Product, as often as the second Figure from the Prick is 5, or more, is because $\frac{1}{2}$ of a Pound is 1 Shilling; for if $\frac{1}{2}l.$ be 2 Shillings, the Half $\frac{1}{4}$, which is $\frac{1}{8}$, must be 1 Shilling.

Lastly, Your reckoning the second and third Places from the Prick so many Farthings, supposes 1000 Farthings in a Pound; and there being but 960, that Rule must be something erroneous, but it is near enough the Truth for ordinary Practice; especially, if for the 40 Farthings, which the 1000 exceeds the 960, you make this Allowance, of deducting one at every 25; for if 1000 is 40 too much, 500 is 20 too much, 250 is 10 too much, 50 Farthings is 2 Farthings too much, and 25 is 1 Farthing too much; so that your Computation for 13 Farthings is half a Farthing too much; and if you deduct a Farthing at all Decimals between 13 and 38 or 39, it may be near enough; for less than a Farthing is never received or paid in *English* Coin. Thus I hope the Rule is made plain, and by it you will find .750 is 7 Tenths of a Pound, or $14s.$ and $.050l.$ or 50 Farthings made less by 2, for the Reason aforesaid, is 48 Farthings, or 1 Shilling more, which makes $15s.$ also $.194l.$ is 1 Tenth of a Pound, or 2 Shillings, $.050l.$ or 1 Shilling more, which makes $3s.$ and 44 Farthings (the 9 being 4 above 5) made less by 2, for the Reason aforesaid, is $10d. \frac{1}{2}$. So the Value is $3s. 10d. \frac{1}{2}$.

Addition.

There is no Difference between Addition of Decimals, and whole Numbers of one Denomination; observing only to place the Decimals Point under Point, as in the Examples, and prick so many off the Sum as are in the greatest Number of Places in the Decimal given.

Example.	Example.	Example.
46.9765l.	.39462	.789
360.146	.0013	.3642
41.007	.99	.153
72.9	.176	.9761
521.0295 Total.	1.56192 Total.	2.2823 Total.

The Reason of this Rule.

The Reason of adding Decimals thus, will appear from that of Vulgar Fractions, after they are reduced to a common Denominator, in which Decimals always are the Denominator to the Decimal of the most Places, being the common Denominator, which is the Divisor, and the Sum of the Numerators in the Dividend.

Subtraction of Decimals.

Place the Numbers as in *Addition*, and proceed as in Subtraction of whole Numbers of one Denomination.

<i>Example.</i>		<i>Example.</i>		<i>Example.</i>	
From	39.0049	From	160.99	From	389.0
Take	7.947	Take	94.8462	Take	0.346
Rem.	<u>31.0579</u>	Rem.	<u>66.1438</u>	Rem.	<u>388.654</u>

This Rule is the very same with that in Vulgar Fractions; Decimals always having a common Denominator, as is said before; so that the Difference between the Numerators or Numbers given, is the Numerator of the Answer, as in Vulgar Fractions. *N. B.* To supply the vacant Places or Figures you put or imagine Cyphers.

Multiplication of Decimals.

In this Rule you are to place the Factors, and work as in whole Numbers: But after you have found the Product, observe this *General*

Rule. | As many Decimal Places as you have in both the Factors, so many Places must you prick off towards the Right-hand of the Product. And if so many Places happen not to be contained in the said Product (as it will happen when you multiply two Fractions together that are of little Value) you are to make up the Number by adding Cyphers towards the Left-hand of the said Product.

The Reason of this Rule is plain, it differing nothing from that given for multiplying Vulgar Fractions; for by multiplying the Sums given together, you multiply the Numerators; and by cutting off as many as are in both Decimals given, you multiply the Denominators, and divide that of the Numerators by the Product of the Denominators. Thus, to multiply $\frac{1}{2}$ by $\frac{3}{4}$, is the same as

.75 by 5, and 100 by 10, viz. $\frac{75}{100}$ by $\frac{5}{10}$, for 3 Times 75 is 375; and 10 Times 100 is 1000: So the Product is $\frac{375}{1000}$, or .375.

Example.

Example. Multiply 3.467
by 19.01

$$\begin{array}{r} 3467 \\ 31203 \\ 3467 \\ \hline \end{array}$$

Product 65.90767

Multiply 36492
by .032

$$\begin{array}{r} 72984 \\ 109476 \\ \hline \end{array}$$

Product 1167.774

Example.

Example. Multiply .13461
by 4.2

$$\begin{array}{r} 26922 \\ 53844 \\ \hline \end{array}$$

Product 5.65362

Multiply .1264
by .247

$$\begin{array}{r} 8848 \\ 5056 \\ 2528 \\ \hline \end{array}$$

Product .0312208

Example.

Example. Multiply .01832
by .007

Product .00012824

Multiply .048
by .12

Product .00576

Division.

Division is the same with that of whole Numbers; all the Difficulty thereof is, to know how many Decimal Places to prick off towards the Right-hand of the Quotient: For which take this

Rule.] Take Notice how many Decimal Places you have in the Dividend, and how many in the Divisor; and as many as the Difference is, so many Places must you prick off to the Right-hand of the Quotient: But if so many Places be not in the Quotient, as the said Difference, make up the Number by prefixing Cyphers toward the Left-hand.

Decimal Fractions may also be divided as Vulgar; as,
Example. Divide 12.43210 by 9.465. See the Operation.

9.465)

9.465) 12.43210 (1.31

29671

12760

Remains 3295

Note, That in this and most other Examples in Division of Decimals, it will be necessary to place Cyphers towards the Right-hand of the Dividend; and that you may know what Number of Cyphers to put to the Right-hand of any Dividend, observe this

Rule.] Consider how many Decimal Places you would have in the Quotient (as 3 is sufficient, if it is not afterwards to be multiplied by any Thing) and also how many Decimal Places you have in your Divisor, and make so many Decimal Places in the Dividend, by adding Cyphers, if Need require; as in the Example, where 3.46 is divided by 1.47; and because I would have 3 Decimals in the Quotient, and there are 2 in the Divisor, I must make 5 Decimal Places in the Dividend.

1.47) 3.46000 (2.353

520

790

550

109 Remains.

Which being less than 1 thousandth Part of an Unity, is not material. So much for *Division*.

The *Golden Rule* is the same with that in whole Numbers, observing Multiplication and Division of Decimals, as they are already taught.

The Rule of PRACTICE.

I HAVE thought it most convenient before this Rule contrary to the Usage of other Books of this Kind, first to acquaint the Young Man with proper Precedents and Forms of Business; as also, to give him a tolerable

Notion

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Notion of Fractions : That when he comes to these Rules of Practice, he may readily and practically proceed like a Man in real Business.

This Rule is of the greatest Use and Service, being the readiest and shortest Way of casting up most Sorts of Goods or Merchandize.

But it is first necessary to have the following Tables by Heart.

Parts of a Shilling, and a Pound.

d.		
6 is	$\frac{1}{2}$	$\frac{1}{40}$
4	$\frac{1}{3}$	$\frac{1}{60}$
3	$\frac{1}{4}$	$\frac{1}{80}$
2	$\frac{1}{6}$	$\frac{1}{120}$
1	$\frac{1}{8}$	$\frac{1}{160}$
1	$\frac{1}{12}$	$\frac{1}{240}$
Farthings	$\frac{3}{4}$	$\frac{1}{16}$
	$\frac{1}{2}$	$\frac{1}{24}$
	$\frac{1}{4}$	$\frac{1}{48}$

Parts of a Pound.

s.	d.	
10	0	is $\frac{1}{2}$
6	8	$\frac{1}{3}$
5	0	$\frac{1}{4}$
4	0	$\frac{1}{5}$
3	4	$\frac{1}{6}$
2	6	$\frac{1}{8}$
2	0	$\frac{1}{10}$
1	8	$\frac{1}{12}$
1	0	$\frac{1}{20}$

Note, That this Rule gives the Price of one Thing, and demands the Value or Amount of many of the same Sort : In the Example following, the Price of one Pound is given, and the Amount of 426 is required ; therefore observe to change, in your Mind, the Name of the Species given, and call it so many Sixpences, Shillings, Groats, Pence, Pounds, &c. of Money, as the Price of one of the given Wards, Pounds, Hundreds, &c. are ; as in the Example following it will be : How much come 426 Sixpences to ?

Example.

426 Pounds of Sugar, at 6 d. per lb.

$$2|0) 21|3$$

£. 10|13 s. Ans.

Because 6 d. is the given Price of each lb. now 6 d. being the Half of a Shilling ; therefore the Half of 426 is taken, and gives 213 s. which, divided by 20, the Shillings in a Pound Sterling, gives 10 l. 13 s.

Example. 512 lb. of Cheese, at 4 d. per lb.

$$2|0) 17|0-8 d.$$

8 l 10 s 8 Answer.

Here

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Here 4 *d.* is $\frac{1}{3}$ of a Shilling; therefore the third Part of 512 is 170 *s.* and $\frac{2}{3}$ of a Shilling, or 8 *d.* remains.

Note. Always what remains is of the same Name with the Dividend, which here is Groats, for the Pounds of Cheese are at a Groat each, so that it is 512 Groats.

Example. 246 Yards of Ribband, at 3 *d.* per Yard.
 3 *d.* is $\frac{1}{4}$ of 1 *s.* | 20) 61 — $\frac{3}{4}$ of a Shilling, or 6 *d.*

£. 3 1 6 Answer.

Here the Yards are divided by 4, because 3 *d.* is the 4th of a Shilling; and it quotes 61 Shillings, and 2 remains, or two 3 Pences: So the Answer is 3 *l.* 1 *s.* 6 *d.*

And thus may any proposed Question be answered, belonging to the first Table, or Parts of a Shilling; that is, by dividing the given Number by the Denominator of the Fraction, and the Quotient will be always Shillings, which (the Remainder being known as above) bring into Pounds, by dividing into 20, &c.

When the Price of the Integer is at a Farthing, an Halfpenny, or three Farthings, more than the Price of Pence mentioned, then for these Farthings take their even Part of the foregoing Quotient, taken for the even Parts of a Shilling, and add them together, as in the following Example.

Example. 249 Ells of Canvas, at 4 *d.* $\frac{1}{2}$ per Ell.

4 *d.* is $\frac{1}{3}$ of 1 *s.* | 83 0 the Value at 4 *d.* per Ell.
 $\frac{1}{2}$ is $\frac{1}{8}$ of 4 *d.* | 10 4 $\frac{1}{2}$ the Value at $\frac{1}{2}$ per Ell.

20) 93 4 $\frac{1}{2}$ the Value at 4 *d.* $\frac{1}{2}$ per Ell, in
Shillings, Pence, and Far-
things. Divide the Shil-
lings by 20, and then it

Answer £ 4 13 4 $\frac{1}{2}$

will be 4 *l.* 13 *s.* 4 *d.* $\frac{1}{2}$.

In this Example I divide by 3 for the Groats, as being one Third of one Shilling, and it quotes 83 *s.* then I consider that a Halfpenny is the Eighth of 4 *d.* therefore I take the eighth Part of the Groat-Line, or 83 *s.* and that produces 10 *s.* and $\frac{3}{8}$ of a Shilling, or 4 *d.* $\frac{1}{2}$; then the two Lines being added together, make 93 *s.* 4 *d.* $\frac{1}{2}$; or 4 *l.* 13 *s.* 4 *d.* $\frac{1}{2}$, as in the Work.

Example

Example. 254 Yards of Cloth, at 10 s. per Yard.

10 s. is $\frac{1}{2}$ of 1 l. 127 £ Answer.

Here the Half of 254 is taken, because the 10 s. is the Half of a Pound.

Example. 972 Gallons, at 6 s. 8 d. per Gallon.

6 s. 8 d. is $\frac{1}{3}$ of 1 l. 324 £ Answer.

Here the third Part is taken, because 6 s. 8 d. is the Third of a Pound; and the Answer is 324 l.

And thus may any Question proposed be answered, belonging to the second Table, or Parts of a Pound; that is, by dividing the given Number by the Denominator of the Fraction, and the Quotient will be always Pounds; and if any Thing remains, it is always so many Halves, Thirds, fourths, Fifths, &c. of a Pound, according to the Denominator that you divide by.

If the Price be Shillings and Pence, or Shillings, Pence, and Farthings, and no even Part of a Pound; then multiply the given Number by the Shillings in the Price, and take even Parts for the Pence, or Pence and Farthings, and add the several Lines together, and they will be shillings; which Shillings bring into Pounds, as before.

Example.

lb.	s.	d.	216 Ells, at 2 s. 3 d. $\frac{1}{2}$
426	4	9	2 per Ell.
4			
1704			3 d. $\frac{1}{4}$ 432
213			$\frac{1}{2}$ d. $\frac{1}{6}$ 54
106 $\frac{1}{2}$ or 6 d.			of 3 d. 9
			2 0 49 5
210 202 3			
Answer £ 101 3 6			£ 24 15 Answer.

396 Gallons of Brandy, at 7 s. 9 d. per
Gallon

$$\begin{array}{r} 2772 \\ 6 d. \text{ is } \frac{1}{2} \text{ of } 1 s. \quad 198 \\ 3 d. \text{ is } \frac{1}{2} \text{ of } 6 d. \quad 99 \end{array}$$

$$2|0) 3069$$

£. 153 9 Answer.

When the Price is 10 d. only annex the 0 to the Right hand of the given Number (which is multiplying by 10) and they are Pence; which divide by 12 and 20.

Example. 426 lb. of Hops, at 10 d. per lb.

$$12) 4260$$

$$2|0) 3515$$

£. 17 15 Answer.

When the Price is 11 d. set down the Quantity twice in the Form of Multiplication, and add the two Lines together; then divide it by 12 and by 20.

Example. 426 lb. of Copper, at 11 d. per lb.

$$426$$

$$12) 4686 \text{ Pence.}$$

$$2|0) 3910-6$$

£. 19 10 6 Answer.

If the Price be 11 d. $\frac{1}{2}$, first do as above, and then take Half of the uppermost Line, &c.

Example. 942 lb. of Tobacco, at 11 d. $\frac{1}{2}$ per lb.

$$942$$

$$471$$

$$12) 10833 \text{ Pence.}$$

$$2|0) 9012-9 d.$$

£. 45 2 9 Answer.

When

When the Price is 1 s. only divide by 20.

Example, 964 lb. of Tobacco, at 12 d. per lb.

£ 48 4 Answer.

When the Price is 2 s. it is done at Sight, by doubling the last Figure towards the Right-hand, and setting it apart for Shillings; and the Figures towards the Left are Pounds.

Example. 596 Gallons of Spirits, at 2 s. per Gallon.

£ 59 12 Answer. Here the double of 6 is 12 s. and the 59 are Pounds.

From this Method of Working by 2 s. a Multitude of Examples may be most expeditiously wrought, viz.

Yards 444 of Cambric,	Ells,
at 5 s. 9 d.	426 at 3 s. 6 d.
44 8 at 2 s.	per Yard.
44 8 at 2 s.	42 12 at 2 s.
22 4 at 2 s.	21 6 at 2 s.
11 2 at 6 d.	10 13 at 6 d.
5 11 at 3 d.	
Answer £ 74 11 at 3 s. 6 d.	
£. 127 13 at 5 9	

Although the Operation of the two last Examples is so intelligibly performed, that there is no Need of further Explanation; yet, to prevent all Mistakes, observe that,

444 Yards of Cambric, at 5 s. 9 d. is done thus,

£ 44 8	The 4 on the Right-hand is doubled
44 8	for Shillings, and the remaining 44
22 4	are so many Pounds, so that 44 £. 8 s. is
11 2	the Amount at 2 s. per Yard, which is
5 11	set down again for 2 s. more, and con-
	sequently the Half, which is 22 £. 4 s.
127 13	is the Amount at 1 s. per Yard, and the
	$\frac{1}{2}$ of this 11 £. 2 s. is the Amount at 6 d.
	per Yard, and the $\frac{1}{2}$ of this 5 £. 11 s. is the Amount at 3 d.
	per Yard, all which being added together, make 127 £.
	the Amount of the Whole at 5 s. 9 d. per Yard.

Note, When the Number of Shillings is large, it will be shorter to multiply the Amount of 2 s. per Yard, per Ell,

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Ell, *per* Pound, &c. by the Number of 2s. as are in the given Price, and the Number be odd, there will always be 1 left, for which you will take the $\frac{1}{2}$ of the 2s. Line, and add it to the Product, as in the following Example.

Example. *548 Yards of Broad-cloth, at 12s. 6d. per Yard.*

£ 54 16 at 2s.
6 Times 2s. is 12s.

328 16 at 12s. *Note, That 13l. 14s.*
6d. is $\frac{1}{2}$ of 1s. 13 14 at 6d. *the 4th Part of 54l. 16*
the two Shilling Line.

£ 342 10 Answer.

Or multiply by 12s.
and take Half of the
given Number for the
6d. thus:

548 Yards.
12 Shillings.
6576 the Shills. at 12d. *per Yard*
 $\frac{1}{2}$)274 at 6d. *per Yard.*

210)68510 the Shills. at 12s. 6d. *per*

£ 342 10 Answer.

When the Price is an even Number of Shillings multiply the Number of Integers by Half the Price, and double the first Figure of the Product for Shillings, and carry as is usual in Multiplication; and the other Figures towards the Left will be Pounds.

Example. *296 Yards of Cloth, at 14s. per Yard.*
7 the Half of 14s.

£ 207 4s. Answer.

Here 7 Times 6 is 42
the Double of 2s. 4s.

When the Price is an odd Number of Shillings, work for the even Number as above; and for the odd Shillings, for the $\frac{1}{2}$ of the given Number, and add the together.

Example

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Example. 496 Gallons of Citron Water, at 17 s. per Gal.
8 the Half of 16, the even Part.

<u>306 16s.</u> 24 16 Answer £ 421 12	In this Example, I say 8 Times 6 is 48; the Double of 8 is 16 s. and carry 4; then 8 Times 9 is 72, and 4 is 76, 6 and carry 7; and 8 Times 4 is 32, and 7 is 39; then the Half of 4 is 2, &c.
---	---

Even Parts of a Pound.

Yards. 426 of Cloth at 10 s. per Yd. 213 Answer. lb. 598 of Cochineal at 5 s. per lb. l. 149½ or 10 s. Answer.	Nobles s. d. 429 at 6 8 each. 6 s. 8 d. ⅓ l. 143 Answer. lb. 154 of Indico, at 4 s. per lb. l. 30 ⅔ or 16 s. Answer.
---	--

4d. | 542 Zeland Dollars, at 3 s. 4 d.

90 ⅓ or 6 s. 8 d. Answer l. 90—6—8 Sterling.

In all these Examples of *Practice*, I divide by the Denominator of the Fraction, and what remains is always the same Name with the said Denominator, as Halves, Thirds, Fourths, Sixths, or Eighths of a Shilling, or of a Pound, &c.

If the Price be Half a Crown, divide by 8; if at 20 d. or 1 s. 8 d. divide by 12, &c.

When the Price is Shillings and Pence, and no even Part of a Pound, multiply the given Number by the Shillings, and take Parts of it for the Pence, as directed before.

Example. 246 Marks, at 13 s. 4 d.

4d. ⅓ 13 738 246 82	For the Groat, I say, the 3's in 24, 8 Times, and the 3's in 6, twice, &c.
---	---

210) 328|0s.

£ 164 Answer.

But

But this Example may be sooner done by multiplying the given Number by 2, and dividing that Product by 3, because a Mark is two Thirds of a Pound, thus :

$$\begin{array}{r} 246 \\ 2 \\ \hline 3 \overline{) 492} \\ \hline \end{array}$$

£ 164 Answer and Proof.

I have not here Room to speak of the various and almost infinite Methods and Rules of *Practice*, having several other Subjects and Things to treat of, but shall leave some general Rules, which, if heedfully noted, will be of great Use to Learners ; and are these, *viz.*

1. When the Price is Parts of a Farthing, or of a Penny, as $\frac{3}{4}$, $\frac{5}{6}$, $\frac{7}{8}$, &c. then multiply the Integers by the Numerator, and divide by the Denominator, and the Result will be either Farthings or Pence, &c. which reduce into Pounds, &c.

2. When the Price is Pence, and no even Part of a Shilling ; as suppose 5 *d.* 7 *d.* 8 *d.* or 9 *d.* then it may be done by taking their Parts, as 3 *d.* and 2 *d.* is 5 *d.* and 4 *d.* and 3 *d.* is 7 *d.* and 4 *d.* and 4 *d.* is 8 *d.* and 6 *d.* and 3 *d.* is 9 *d.* but it is an easy and sure Way to multiply the given Number by 6, 7, 8, or 9, &c. and then the Product is Pence ; which bring into Pounds by *Reduction*.

3. When the Price is Pence, and Parts of a Penny ; as 1 *d.* $\frac{1}{4}$, 2 *d.* $\frac{1}{2}$, or 6 $\frac{3}{4}$; then work for the Penny by taking the $\frac{1}{12}$; for 2 *d.* the $\frac{1}{6}$; and for 6 *d.* the $\frac{1}{2}$: Then for the Farthings, take $\frac{3}{4}$ of the Penny Line ; and for $\frac{1}{2}$, $\frac{3}{4}$ of the two Penny Line ; and for $\frac{3}{4}$ take $\frac{1}{8}$ of the 6 Penny Line ; and add their Results together, and the Total will be Shillings, which reduce to Pounds by dividing by 20 : Or by the sure Way of bringing the mixed Numbers into the lowest Denomination ; as 1 *d.* $\frac{1}{4}$, into 5 qrs. 2 *d.* $\frac{1}{2}$, into 4 Halfpence, and 6 *d.* $\frac{3}{4}$, into 27 Farthings ; then multiply the Integer by 5, and the Product is Farthings ; or by 4 Halfpence, and the Product will be Halfpence ; or by 27 Farthings, and the Product will be Farthings ; which whether Farthings or Pence, reduce to Pounds, &c.

4. When the Price is Shillings and Pence, or Shillings, Pence, and Farthings ; multiply the Integers by the Shil-

lings of the Price, and take Parts for the Pence, or Pence and Farthings, &c.

5. If the Price be Pounds and Shillings, or Pounds, Shillings, Pence, and Farthings; multiply by the Shillings in the Price, that is, in the Pounds and Shillings, and take Parts of the Pence and Farthings.

6. When the Number of Integers hath a Fraction annexed, or belonging to them; as $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, &c. then take $\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ of the Price of one of the Integers, and add that to the other Results.

7. That you may be sure your Work is right, it will be proper always to work your Question at least two different Ways, and if the Answers come out alike, then you may be sure your Work is true, otherwise it is false. As, for Example:

827 Ells of fine Holland, at 8s. 9d. per Ell.

82 14 at 2s.		827 Ells.	
4 Times 2s. is 8s.		8	
330 16 Value, at 8s.		6616 at 8s. per Ell.	
6d. $\frac{1}{2}$ 2s. 20 13 6 at 6d.	6d. $\frac{1}{2}$ 1s. 413 6d. at 6		
3d. $\frac{1}{2}$ 6d. 10 6 9 at 3d.	3d. $\frac{1}{2}$ 6d. 200 9d. at 3		
361 16 3 at 8s. 9d.		210723 6 3 at 8 9	
		361 61 3	

TARE and TRET, &c.

Gross Weight is the Weight both of the Goods in Hunsreds, Quarters, and Pounds, and also of the Weight of the Hoghead, Cask, Chest, Bag, Bale, &c. in which the Goods are contained.

Tare is allowed to the Buyer for the Weight of the Hoghead, Cask, Chest, Bag, Bale, &c. that contains the Goods.

Tret is an Allowance made for Waste, Dust, &c. in sundry Sorts of Goods, as Tobaccos, Cottons, Peppers, Spices, &c. and is always 4lb. per 104lb. Suttle, and found by dividing theuttle Pounds by 26, because 4 Times 26 makes 104lb. When the gross Weight is brought into Pounds, and before the Tare is deducted, they are called *Pounds Gross*; and after the Tare is subtracted, the remaining Pounds are called *Pounds Suttle*; which

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which divided by 26 (as said before) quotes Pounds Trets &c. which being deducted out of the Suttle Pounds, leave the Pounds Nett.

Tare at so much per Cask, Hogshead, Bag, &c.

The Allowances for Tare are variously wrought, as by the following Examples.

In 12 Casks of Indigo, containing 45 C. 1 qr. 14 lb. Gross, Tare 30 lb. per Cask, how many Pounds Nett?

12 Casks.	C. qr. lb.
360 Pounds Tare	45—1—14
	45
	45
	4542

5082 Pounds Gross.
Subtract 360 Pounds Tare.

Answer 4722 Pounds Nett.

In this Example, the lbs. Tare of one are multiplied by the Number of Casks, and the Product is 360 Pounds Tare, and the Gross Weight is reduced into Pounds, by the Method shewn in *Reduction* of Weight; and then the Pounds Tare are deducted from the Pounds Gross, and the Remainder are Pounds Nett. *viz.* 4722, as in the Work.

When the Tare is so much *per* Cwt. multiply the Number of Hundreds by the Tare, and take Parts for the odd Weight, and add it to the Tare found by Multiplication, and divide it by 112, to bring it into Gross Weight, in order for Subtraction.

Example. *What is the Nett Weight of 12 Casks of Argol Wt. Gross?*

84 C. 2 qrs. 14 lb.	
14 Tare per C.	
336	C. q. lb.
84	84—2—14 Gross
	10—2—8 $\frac{3}{4}$ Tare
7 for half C.	
1 $\frac{3}{4}$ for 14 lb.	74—0—5 $\frac{1}{4}$ Nett Wt.
112) 1184 $\frac{3}{4}$ (10 C.	
112	
64 lb. or half a C. and 8 lb. $\frac{3}{4}$	

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The Tare in the last Example is found to be, by the foregoing Directions 10 Cwt. 0 qrs. 8lb. $\frac{3}{4}$, which subtracted, as in the Work, leaves 74 Cwt. 2 qrs. 5lb. $\frac{1}{4}$ for the Nett Weight.

But the foregoing Example may be sooner done by *Practice*, thus:

$$\begin{array}{r} \text{C. q. lb.} \\ 8)84-2-14 \text{ Grosse.} \\ \text{sub. } 10-2-8\frac{3}{4} \text{ Tare.} \\ \hline 74-0-5\frac{1}{4} \text{ Nett.} \end{array}$$

In this Method, the Gross Weight is divided by 8, because 14lb. is one eighth Part of the 112lb. and the Remainder is reduced into the next inferior Name, and still divided by 8 to the End, and then deducted as above; and the Nett Weight is the same as by the other Way. And so may any Tare *per Cent.* be found, if the Tare be an even Part of 112lb. as 14 is one Eighth, and 7lb. is the Half of that, and 16lb. is one Seventh, and 8lb. is the Half of that, &c. that is, if the Tare be at 7lb. *per Cwt.* find it for 14lb. as before, and then take the Half of that for 7 lb. *per Cwt.* Tare, the like for 8lb. *per Cwt.* Tare; take one Seventh for 16lb. and then the Half of that for 8lb. *per Cwt.* Tare.

Of T R E T T.

What *Trett* is, when allowed, and how found, hath been said already; now I shall give an Example for Explanation as follows.

Bought six Hogsheads of Tobacco, containing Gross and Tare, as follow, *viz.*

No	C.	qrs.	lb.	lb.
1 2 qt. Grosse	4	1	20	Tare 80
2	5	2	19	100
3	6	3	18	102
4	7	3	12	104
5	8	2	13	106
6	9	1	14	110
26)4198(161 lb. Trett	42	3	12	602

26

42

42

159

42 96

156

4800 Pounds Grosse.

Subtract 602 Pounds Tare.

38

26

4198 Pounds Suttle.

Deduct 161 $\frac{6}{13}$ Pounds Trett.

12 or $\frac{6}{13}$

M 2

4036 $\frac{7}{13}$

Note,

Note, The 12 that remain is $\frac{12}{28}$ Parts of a Pound, which being abbreviated, as directed in the Rules for Vulgar Fractions, make $\frac{6}{13}$.

There are some few other Rules, such as Barter, or exchanging Goods for Goods; also Exchanges of Coin, Profit and Loss, &c. but all of them being done either by the Rule of Three, or by Rules of Practice, it is therefore here unnecessary to enlarge upon them.



RULES and DIRECTIONS for BOOK-KEEPING:
Or, MERCHANTS-ACCOUNTS.

IT is not without good Reason that most People of Business and Ingenuity are desirous to be Masters of this Art, if we consider the Satisfaction that naturally arises from an Account well kept; the Pleasure that accrues to a Person by seeing what he gains by each Species of Goods he deals in, and his whole Profit by a Year's Trade; and thereby also to know the true State of his Affairs and Circumstances, so that he may, according to his Discretion, retrench or enlarge his Expences, &c. as he shall think fit.

Of the Books in Use.

THE Books of principal Use are, the *Waste-Book*, the *Journal*, and the *Leidger*.

WASTE-BOOK.

IN this Book must be daily written whatever occurs in the Way of Trade; as Buying, Selling, Receiving, Delivering, Bargaining, Shipping, &c. without Omission of any one Thing either bought or sold, excepting where ready Money is concerned, whether it be for Goods sold or bought immediately, Money lent or received at Interest, &c. for that must of course be entered into the *Cash-Book*, from whence it is posted into the *Leidger*.

The *Waste-Book* is ruled with one marginal Line towards the Left-hand, and three Lines, for Pounds, Shillings, and Pence, towards the Right-hand; and the Day of the Month, or Year of our Lord, is commonly wrote or inserted in the Middle of the Page. In this Book any one may write, and, on Occasion, any Thing may be altered or blotted out, if not well entered, or any Error be made.

JOURNAL

JOURNAL.

INTO this Book every Thing is posted out of the *Waste-Book*, but, in other Terms, in a better Style, and in a fairer Hand, without any Alteration of Cyphers or Figures; and every Parcel, one after another (promiscuously set) without Intermission; to make the Book, or several Entries of it, of more Credit and Validity, in Case of any Law, Dispute, or other Controversy that may happen between Merchant and Merchant. In this Book you are to distinguish the Debtor and Creditor, or, in quainter Terms, the Debt and Credit. And to this Book you must have Recourse for the Particulars of an Account, which in the *Leidger* are entered in Grois, that is, in one Line. In this Book also, the Day of the Month must be placed in the Middle of the Page; and is ruled with double marginal Lines. for References to the *Leidger*, on the Left-hand; and with three Lines for Pounds, Shillings, and Pence, on the Right-hand; as the *Waste Book*.

Of the LEIDGER.

FROM the *Day-Book*, or *Journal*, as derived from the *French*, all Matters or Things are posted into the *Leidger*, which, by the *Spaniards*, is called *El Libre grande*, as being the biggest, or chief Book of Accounts. The Left hand Side of this Book is the *Debtor*, and the Right the *Creditor*, and the *Number* and *Folio* of each must be alike, as 45 *Debtor*, and also 45 *Creditor*. The Day of the Month, (in this Book) by most, is set in a narrow Column on the Left-hand, and the Month on the Left of that: But the Number in the narrow Column referred to the Journal Page, and the Month and Day may be placed in the broad Column to the Right of that; and at the Head of each Folio, the Name of the Place of Residence, and the Year of our Lord, are thus:

London, Anno _____ 1774.

But the Examples of these several Books, hereafter following, will make the foregoing Hints concerning them much more intelligible. — Throughout the whole Practice of Booking,, continually remember, that

All Things received, or the Receiver, are Debtors to the Things delivered, or the Deliverer.

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Waste-Book Entry.

London, January 1, 1774.

	Bought of William Wilkins, of Nortonfalgate, 120 Yards of white Sarcenet, at 2 s. 3 d. per Yard, to pay in 2 Months	l.	s.	d.
		13	10	00

1 The Journal Entry of the same.

2	Wrought Silk Debtor to William Wilkins, l. 13—10 for 120 Yards of white Sarcenet, at 2 s. 3 d. per Yard, to pay in 2 Months—	13	10	00
---	--	----	----	----

In this Example, the Account of wrought Silks is the Receiver, and therefore Debtor to William Wilkins the Deliverer.

Note, This is a general Method of entering all such Goods; but if you are desirous to know the Profit or Loss upon any particular Species of Goods, it would be best to buy, White Sarcenet Debtor, &c.

Again.

Waste Book Entry.

January 4.

	Sold Henry Hartington 246 lb. Nett, of Indigo Lahore, at 6s. 6d. per lb. to pay at 3 Months	79	19	00
--	--	----	----	----

Journal Entry.

3	Henry Hartington, Dtr. to Indigo Lahore for 246 lb. Nett, at 6 s. 6 d. per lb. to pay in 3			
4	Months	79	19	00

Once more.

Waste-Book Entry.

Bought of George Goodinch, sen. viz.

	Cheshire Cheese 430 C. $\frac{1}{2}$, at 23 s. 4 d. per C.	l. 502—5		
	Butter, 50 Firkins qt. Nett 2800 lb. at 3 d. per lb. to pay at 6 Months	35—0	537	05 00

Journal Entry.

5	Sundry Accounts Dtr. to George Goodinch, l. 537—05—viz.			
4	Cheese of Cheshire, for 430 C. $\frac{1}{2}$, at 23 s. 4 d. per C.	l. 502—5		
5	Butter, for 50 Firkins, qt. Nett, 2800 lb. at 3 d. per lb. to pay at 6 Months.	35—0	537	05 00

Waste

Waste-Book.

Sold James Jenkins——viz.

White Sarcenet 50 Yards, at 3 s.	l.	7	10	0			
per Yard ————							
Indigo Lahore, 50 lb. at 7 s. per lb.	17	10	0	0	25	00	00

Journal Entry of the last.

6 James Jenkins, Dtr. to sundry Accounts, viz.

To wrought Silks, or to white	l.	7	10	0			
7 Sarcenet, for 30 Yards, at 3 s.							
per Yard, according as the Acc.							
shall be tiled ————							
8 To Indigo Lahore, for 50 lb. at	17	10	0	0	25	00	00
7 s. per lb. ————							

From these few Examples of Entry, it may be observed, that an experienced Person in Accounts, and a good Writer, may keep a *Journal* without a *Waste-Book*, or a *Waste-Book* without a *Journal*, since they both import one and the same Thing, though they differ a little in Words, or Expression; for the Leaves of both are numbered by Pages or Parcels.

But, however, I shall give Methods of keeping each, as far as Room will give Leave. But, before any Thing is done, an Inventory, or Particular, of your whole Stock or Estate ought to be taken, as in the following Instance, where the first Part contains what you are supposed to be possessed of, or have owing, and the second Part what you owe to others.

(1)
Waste-Book.

London, January ———— 1774.

An Inventory of all the Effects in Money, Goods, and Debts, belonging to me A. B. of London, Merchant, — viz.

In Cash for Trading Occasions	l.	35	00	00	0			
In Tobacco 47 26 lb. at 9 d. per lb.	177	04	6					
In Broadcloth 6 Pieces, at 50 s.	15	00	0					
per Piece ————								
Dowlas 1000 Ells, at 2 s. 4 d. per Ell	116	13	4					
Canary Wines 9 Pipes, at 30 l.	270	00	0					
per Pipe ————								
Due to me from Henry Bland	60	00	0					
per Bond ————								
12 March next Interest 5 per Cent.	4138	17	10					

(1)

*Journal.*Sundry Accounts Dr. to Stock 4138*l.* 17*s.* 10*d.*

— viz.

1 Cash for Trading Occasions 3500—00—0

Tobacco 4726 lb. at 9*d.* } 177—04—6
per lb. ———— }1 Broadcloths 6 Pieces, at } 15—00—0
50*s.* per Piece ———— }1 Dowlas 1000 Ells, at 2*s.* } 116—13—4
4*d.* per Ell ———— }1 Canary Wines 9 Pipes, at } 270—00—0
30*l.* per Pipe ———— }

Henry Bland due on Bond 60—00—0

12 March next, Interest 5 per Cent. ———— 4138 17 10

I shall make one Page serve both for *Waste-Book* and *Journal Entries*, as well to save Room, as to have both Methods of Entry under Eye, to make them more intelligible and useful to the Reader, he hereby being not obliged to turn over Leaf to see their Difference of Entry.

*Waste-Book.*London, January 1st, ———— 1774.Owing to William Webb, by } 50 00 00
Note of Hand ———— }Ditto to Roger Ruff, to ba- } 16—12—04
alance his Accompt ———— }Ditto to Henry Hern, due the } 62—00 00 128 12 04
4th of May next ———— }*Journal.*1 Stock Debtor to sundry Accompts, 128*l.*— 12*s.* 4*d.* ———— viz.3 To William Webb, by Note } 50—00—00
4 of my Hand ———— }To Roger Ruff, for Balance } 16—12—04
of his Accompt ———— }5 To Henry Hern, due the 4th } 62—00—00 128 12 04
of May next ———— }

So that my nett Estate is but 4010*l.* 4*s.* 8*d.* supposing my Bond due from Henry Bland to be as good as Money in Hand, because I must always look upon myself obliged to pay all my own Debts, although my Debtors do not pay me.

Waste-

London, Feb. 2. ————— 1774.

Sold Thomas Townshend, viz.

246lb. of Virginia Cut Tobacco; at 14 d. per lb.	}	14-07-00			
460 Ells of Dowlas, at 3 s. per Ell		69-00-00			
			83	07	00

Feb. 2.

Journal.

6 - Thomas Townshend Debtor to Sundries, viz.

1 To Tobacco for 246lb. at 14 d per lb.	}	14-07-00			
1 To Dowlas for 460 Ells at 3 s. per Ell		69-00-00			
			83	07	00

Waste-Book.

Ditto 24th.

Bought of Leonard Legg, 4 Pipes of Canary,
at 28 l. per Pipe. ———— 112 00 00
To pay in 6 Months

Ditto 24th.

Journal.

1 Canary Wines Debtor to Leonard Legg for
4 Pipes, at 28 l per Pipe ———— 112 00 00
2 To pay in 6 Months.

The short Lines ruled against the Journal Entries are, or may be, termed Posting Lines, and the Figure on the Top of the Line denotes the Folio of the Ledger where the Debtor is entered; and the Figure under the Line shews the Folio of the Ledger where the Creditor is entered; and the other smaller Figures against the sundry Debtors, or sundry Creditors (whether Goods or Persons) shew also in what Folios of the Ledger they are posted. And the Figures in the narrow Column towards the Left-hand of the Pounds, Shillings, and Pence Lines, direct to the Folio of the Ledger where the Debit or Credit is posted; that is, to the Account of the Goods or of the Person, immediately following the Words *To* or *By*; the first being

being proper to the Left or *Debit* Side in the *Leidger*; and the other used always on the Right or *Credit* Side of the *Folios* in the *Leidger*.

There are several other Books used by Merchants besides those three before-mentioned; as the *Cash-Book*, which is ruled as the *Leidger*, and folio'd likewise; wherein all Receipts of Money are entered on the Left-hand Folio, and Payments on the Right; specifying in every Entry the Day of the Month, the Year being set on the Top, for what, and for whose Account the Money was received, or paid; and the Total *Debit* and *Credit* of each Side is to be posted into the *Leidger*, to the Account of Cash therein, in one Line of either Side, *viz* To, or By sundry Accompts, as *per* Cash-Book, Folio, &c. which is to be done once a Month, or at Discretion; and the Particulars of each Side, Article by Article, are to be posted into the *Leidger* to the proper Accompts unto which they belong; with References in the *Cash-Book* to the several *Folios* in the *Leidger*, and carry the Balance over Leaf in the *Cash-Book*; by which you may know at any Time what Cash you have, or ought to have, by you.

Another Book is a Book of Charges of Merchandizes, wherein are to be entered the Custom and petty Charges of any shipped Goods; as Porterage, Wharfage, Warehouse-room, &c. and once a Month are transferred into the *Cash-Book* on the *Credit* Side, making References to the Book of Charges of Merchandize; and likewise the same in the *Debtor* Side of the same Account in the *Leidger* for the Particulars thereof.

The next Book I shall name is the *Invoice-Book*, or Book of Factories: In this Book are to be copied all Invoices, or Cargozones of Goods shipped, either for Accompts proper or in Company; and also Goods received from abroad, which must always be entered on the Left-side, leaving the Right-side blank; and on the Advice of the Disposal of Goods sent abroad, and also on the Sale of Goods received from abroad, enter them on the blank, or right Side; so that at first View may be seen how the Account stands, &c.

The next is a *Bill-Book*, wherein are entered Bills of Exchange accepted, and when they become due; and when paid, made so in the Margin.

The

The next is a Book of household Expences, for the Monthly Charges spent in House-keeping; likewise Apparel, House-Rent, Servants Wages, and Pocket Expences; and this may be monthly summed up, and carried to the Credit of Cash.

Besides the above-mentioned, there must be a Book to copy all Letters sent abroad, or beyond the Seas; wherein the Name of the Person or Persons to whom the Letter is sent, must be written pretty full, for the readier finding the same.

The next is, and what is very necessary, a Receipt-Book, wherein are given receipts for Money paid, and expressed for whose Account or Use, and for what is received; to which the Receiving Person must set his Name, if he acts only for himself; but if he acts for another, he must nominate him, and specify himself to be his Agent, with the Year and Day of the Month when the Money was paid.

Lastly, A Note or Memorandum Book, to minute down Affairs that occur, for the better Help of Memory; which is of great Use where there is multiplicity of Business.

Having given an Account of several Books and their Use, the next Thing necessary will be to give some few Rules of Aid, to enable the Book-keeper to make proper Entries, and to distinguish the several Debtors and Creditors, *viz.*

First, For Money received, make Cash Dtr. to the Party who paid it, [if for his own Account] and the Party Cr. *N. B.* If *A. B.* pays Money for *C. D.* you must make *C. D.* Creditor for the Sum received by the Hands of *A. B.* &c.

Secondly, Money paid, make the Receiver Dtr. [if for his own Account] and Cash Cr. Here the Principal must be understood to be the Receiver, although his Servant transacts the Business: So if *A. B.* receive for *C. D.* — *C. D.* must be Dtr.

Thirdly, Goods bought for ready Money, make the Goods Dtr. to Cash, and Cr. by the Goods.

Fourthly, Goods sold for Ready Money, just the contrary, *i. e.* Cash Dtr. and the Goods Cr.

Fifthly, Goods bought at Time; Goods bought are Dtr. to the Seller, and the Seller Cr. by the Goods.

Sixthly, Goods sold at Time, just the contrary, *i. e.* the Party who bought them Dtr. to the Goods, and the Goods Cr. by the Party who is the real Buyer.

Seventhly,

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Seventhly, Goods bought, Part for ready Money, and the rest at Time: First, make the Goods Dtr. to the Party for the Whole. Secondly, make the Party Dr. to Cash for the Money paid him in Part of these Goods.

Eighthly, Goods sold, Part for ready Money, and the rest at Time: First, make the Party Dtr. to the Goods for the Whole. Secondly, Cash Dtr. to the Party for so much as you receive of him in Part of those Goods. — Or you may *Debit* the Goods bought or sold to Sundries *viz.* Goods bought, Dtr. to the Selling Man for so much as is left unpaid, and to Cash for so much paid in ready Money: And so the contrary for Goods sold.

Nimbley, When you pay Money before it is due, and are to have Discount allowed you, make the Person Dtr. to Cash for so much as you pay him, and to profit and Loss for the Discount; or make the receiving Man Dtr. to Sundries as before.

Profit and Loss.

To Cash for what Money you pay, and have nothing for it; as Discount of Money paid you before due, and to Abatement by Composition, household Expences, &c.

Per Contra Cr.

By Cash for all you receive, and deliver nothing for it as Discount for prompt Payment, any Legacy left you, Money received with an Apprentice, and by the Profit of every particular Commodity you deal in, by Ships in Company, by Voyages, &c.

To balance or clear an Accompt when full written.

1. **I**F the Dtr. Side be more than the Credit, make the old Accompt Cr. by the new; and, if the contrary, make the new Accompt Dtr. to the old: But if the Dtr. Side be less than the Credit, then make the old Accompt Dtr. to the new, and the new Accompt Cr. by the old, for such a Rest or Sum as you shall find in the Accompt.

2. An Accompt of Company, wherein you have placed more received of another than his Stock; then add as much on the *Debit* Side as you find on the *Credit* Side; to the End that, in the new Accompt, you may have so much *Debit* as you put in, and so much *Credit* as you have received.

3. In

3. In Accompts of Merchandize, you must enter the Gain, or Loss, before you make the old Accompt Cr. by the new, and the new Dtr. to the old, for the Remainder of Goods unfold.

4. In the Foreign Accompts, which you are to keep with a double Margin or Column, for Dollars, Crowns, or any Foreign Coins whatsoever, which have been received or paid by Bills of Exchange, for Goods sold by Factors or Correspondents, or bought by them for the Accompt before; here you must first balance the said inward Margin of Dollars Crowns, &c.

To remove an Accompt full written, to another Folio.

Sum or add up the Dtr. and Cr. Sides, and set the Difference; which place to it's Opposite: As, admit the Cr. Side exceeds the Dr. then you are to write the Line in the old Accompt to balance on the Dtr. Side, to answer the Line on the Cr. Side of the new Accompt.

How to balance at the Year's End, and thereby to know the State of your Affairs and Circumstances.

YOU must make an Accompt of Balance on the next void Leaf or Folio of your Leidger to your other Accompts; but after you have so done, do not venture to draw out the Accompt of Balance in the said Folio, till you have made it exact on a Sheet of Paper ruled and titled for that Purpose; because of Mistakes or Errors that may occur or happen in the Course of balancing your Leidger; which are to be rectified, and will cause Erasements or Alterations in that Accompt, which ought to be very fair and exact; and after you have made it right in the said Sheet, copy fair the said Accompt of Balance into the Leidger.

The Rules for balancing are these, *viz.*

1st, Even your Accompt of Cash, and bear the Nett Rest to balance Dtr.

2^{dly}, Cast up all your Goods bought, and those sold, of what Kind soever, in each Accompt of Goods; and see whether all Goods bought, be sold, or not; and if any remain unfold, value them as they cost you, or according to the present Market Price for ready Money, and bear the next Rest to balance Dtr.

3^{dly}, See what your Goods or Wares severally cost, and also how much they were sold for, and bear the Nett Gain or Loss, to the Accompt of Profit and Loss.

4^{thly},

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4^{thly}, Even all your Dtrs. and all your Crs. in order as they lie, and bear the Nett Rest of every several Dr. and Cr. to balance.

5^{thly}, Even your Voyages, your Factors' Accompts, and Charges of Merchandize, or any other Accompts, wherein is either Gain or Loss, and bear the Nett Gain or Loss to the Accompt of Profit and Loss; and the Goods unfold to balance.

6^{thly}, Even the Accompt of Profit and Loss, and bear the Nett Rest to Stock or Capital, as an Advance or Diminution to your Stock or Capital.

7^{thly}, Even your Stock, and bear the Nett Rest to balance Cr.

Then cast up the Dtr. and Cr. Sides of your Balance; and if they come out both alike, then are your Accompts well kept; otherwise you must find out your Error by pricking over your Books again, to see whether you have entered every Dtr. and Cr. in the Leidger, as you ought.

Note, *By pricking over the Books is meant an examining every Article of the Journal against the Leidger, and marking it thus — or thus †; and upon a Second Examination thus †; and upon a Third Examination thus † — or any other Marks.*

Note also, *In all Accompts of Goods, you must keep a Column in the Middle of the Leaf, of each Side, for Number, Weight, or Measure.*

And also note, *That the Money, Wares, or Goods, remaining in your Hands, and the Debts owing to you, must over balance with the Nett Stock and Debts owing by you.*

Though what hath been said in Relation to Book-keeping and the several Rules thereunto belonging, may seem a little abstruse to the altogether unlearned therein; yet there is no such mighty Difficulty to obstruct them as they may imagine: For these following Hints may render what hath been already said intelligible to any ordinary Capacity:

1st, Stick close to the Text, or general Rule before-mentioned, *viz.* That all Things received, or the Receiver, are Debtor to all Things delivered, or the Deliverer; for this Rule holds good in all Cases.

2^{dly}, When the Dtr. (whether Person or Goods) is known, the Cr. is easily understood, without mentioning it: For if *A* be Dtr. to *B*, then *B* is Cr. to *A*, for what Sum soever it be: Also, if Goods be Dr. to *C*, then *C* is

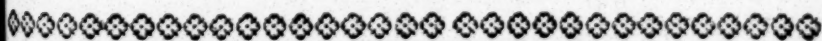
Cr. by those Goods, for the Sum they amount to. -- This I mention, because that most Authors, (if not all) whom I have met with on the Subject of Book-keeping, spend a great many Words which I think might be saved, in declaring the Cr. as well as shewing the Dtr. when it may be understood as aforesaid.

3dly, This Art of *Italian* Book-keeping is called *Book-keeping by double Entry*, because there must be two Entries; the first being a Charging of a Person, Money, or Goods: and the second a Discharging of a Person, Money, or Goods.

4thly, *Strictly note*, That if the first Entry be on the Dtr. or Left-hand Side of your Leidger, the next, or second Entry, must always be made on the Right-hand or Credit Side of your Leidger: For whenever one Person or Thing is charged, then always another Person or Thing is discharged for the same Sum, let it be what it will.

And so it is in balancing or evening an Accompt, and carrying it to another Folio: For if the old Accompt be evened by Balance on the Credit Side, then the new Accompt must be debited or charged on the *Debit* Side, for the Sum that balanced the old Accompt.

Much more might be said of this *Art of Book-keeping*, if I had Room; but I have plainly spoke of the principal Fundamentals thereof, which, I hope, may be sufficient for the Instruction and Improvement of any intelligent Reader.



Of *CHRONOLOGY*, or the Doctrine of *TIME*.

Containing an Account of the different *Æras* or Epochas used at different Times, and by different Nations; a full Explanation of the Old and New Styles; and the Method of finding the Golden Number, Epact, Moon's Age, Dominical Letter, Time of Easter, &c.

CHRONOLOGY is one of the most useful Branches of Learning in the whole Circle of the Sciences; by this we are enabled to distinguish the Times in which remarkable Events have happened, and, by that Means, reduce History to a Natural Series, and give it a proper Form.

An

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An *Æra*, or *Epocha*, is the Time when some memorable Transaction occurred, and from whence some Nation or People date and measure their Computations of Time.

The most ancient *Epocha* is that of the Creation of the World, which happened 4004 Years before the Birth of *Christ*. This *Epocha* was used by most of the ancient *Jewish* Writers, who have left us a noble and authentic History of Occurrences from the Beginning of Things.

The second *Epocha* is that of the Deluge or Flood of *Noah*, which happened in the Year of the World 1656, or 2340 Years before our Saviour's Incarnation. This was also used by the *Jews* of old, but not so frequently as that of the Creation.

The third *Epocha* is that of the *Olympic Games*, which were instituted by *Hercules* in the Year of the World 3228, or 776 Years before the Birth of *Christ*. These Games were celebrated every four Years near the Temple of *Jupiter Olympus*, in *Elis*, a Province of *Peloponnesus*. This *Epocha* was used by the *Greek* Historians; but, instead of saying an Event happened in such a Year from this Establishment, they said, it happened in such a Year of the first, second, third, &c. *Olympiad*.

The fourth *Epocha* is that of the Building of *Rome*, which happened in the Year of the World 3251, or 753 Years before the Birth of *Christ*. This *Epocha* was used by the ancient *Romans*, before the Establishment of Christianity in that City.

The fifth *Epocha* is that of *Nabonassar*, which began in the Year of the World 3257, or 747 Years before the Birth of *Christ*. This *Epocha* is famous among Astronomers, as having been used by the *Chaldeans* and *Egyptians*; but is hardly mentioned by Historians.

The sixth is that of the Death of *Alexander* the Great, which happened in the Year of the World 3676, or 324 Years before the Incarnation of our Saviour. This *Epocha* also is used principally by Astronomers.

The seventh *Epocha* is that of the Birth of *Christ*, which happened in the Year of the World 4004. This *Epocha* is used by all *Christians* in general; and most Historians reduce the other Epochas to this, in order to prevent Embarrassment and Confusion.

The eighth *Epocha* is that of the *Hejira*, or Flight of *Mohammed*, which happened in the Year of the World

626, and in the 622d of the *Christian Æra*. This Epocha is used by the *Turks, Arabs*, and others professing the *Mahomedan Religion*.

There are several other Epochas mentioned by Chronologists, but the above are the principal, and abundantly sufficient for our present Purpose.

But these Epochas could have been of no Use, unless a certain Measure of Time was agreed on, as it would otherwise be impossible to assign the Distance between these and other Events. This Measure Nature herself pointed out by the Return of the Seasons, and this Interval or Measure was called a Year.

Having thus ascertained the principal Interval, it was necessary to subdivide it into a certain Number of Parts; and these were also pointed out by Nature by the Returns of the new Moon. The Ancients observed, that, during the Interval between the Return of the Seasons, twelve new Moons happened, and therefore they divided the Year into Twelve Parts, which they called Months, from their being measured by the Moon. As they reckoned about thirty Returns of Mornings and Evenings between the new Moons, they made their Months to consist of thirty Days; and, consequently, their Year of twelve Months consisted only of 360 Days; and this is what is generally understood by the antient lunar Year.

But they soon perceived that this Year was far from agreeing with the Course of the Sun, the Seasons falling every Year later and later; and, consequently, in Time, the Beginning of the Year would gradually pass through all the Seasons. This obliged them to consider of some general Method to prevent the Year from beginning at different Seasons, but this was a Task they could not perform, and therefore had Recourse to temporary Methods, namely, by taking, from Time to Time, a Day or two from every Month, whenever they found it too long for the Course of the Moon, and by adding a Month as often as they found twelve lunar Months too short for the Return of the four Seasons. This Task was performed, from Time to Time by the Priests, whose Business it was to correct the Year, and render it conformable to the Motion of the Sun. This Kind of Year was formerly used by most Nations in the World, as is still continued by the *Turks and Arabs*.

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This Method was, however, attended with great Difficulty, and, at the same Time, rendered the Method of fixing the Dates of memorable Events abstruse and uncertain. *Julius Cæsar*, therefore, about 40 Years before the Birth of *Christ*, undertook to rectify the Confusion that must attend a Variety of Accounts, knowing that his Order, as coming from the Emperor of the *Romans*, would be immediately obeyed in a very considerable Part of the World, and, in Time, spread into other Nations.

In order to this he decreed, that every Year, except the fourth, should consist of 365 Days, and the fourth of 366. This Decree was founded on the Authority of *Syslogenes*, an eminent Mathematician of *Alexandria*, in *Egypt*, who had found, by Experience, that the Year consisted of 365 Days and a Quarter; the true Reason, therefore, why every fourth Year was to consist of 366 Days, was to compensate for the Quarter of a Day omitted in each of the three preceding Years. And this Method of computing Time is that called the *Julian Account* or *Old Style*, which continued in most *Christian* States till the Year 1582.

But, as Astronomy advanced towards Perfection, Observations were made with greater Accuracy, and these demonstrated that *Syslogenes* was mistaken with Regard to the Length of the solar Year, which consists only of 365 Days, 5 Hours, 48 Minutes, 55 Seconds, &c. being 11 Minutes 5 Seconds less than 365 Days, 6 Hours; therefore the *Julian Year* will gain one Day in 130 Years, that is, if the vernal Equinox, or the Time when the Sun rises and sets exactly at six o'Clock, happened in any Year on the 21st of *March*, it would, after an Interval of 130 Years, happen on the 20th, and thus continue to move in a retrograde Order. Consequently, if one Day be omitted in 130 Years, the current Account of Time will nearly agree with the Motion of the Sun. For as 24 Hours is the least Quantity that can be taken from an Account of Time where the least Denomination is a natural Day, so this Quantity is actually subtracted as soon as the Difference between the Computation and the Motion of the Sun amounts to that Quantity.

We know from History, that at the Time when the Council of *Nice* was held, namely, in 325, the vernal Equinox happened on the 21st of *March*, and at this Council

Council the Time for celebrating *Easter* was settled. But, about the Year 580, the vernal Equinox was observed to fall on the 11th of *March*, ten Days later than it did at the Time of the *Nicene Council*; this Pope *Gregory*, then Pope of *Rome*, observed, and, in order to celebrate the Feast of *Easter*, according to the original Intention of the Council of *Nice*, he ordered, by a Bull, published in 1581, that the ten Days should be that Year taken out of the Calendar, by calling the 5th of *October* the 15th, by which Means, the vernal Equinox was again made to fall on the 21st of *March*, and the Feast of *Easter* celebrated at its proper Time.

But he knew that this Correction was not sufficient to prevent the Equinox from continuing its retrograde Motion, which had, since the Council of *Nice*, produced so sensible an Alteration; he therefore ordered, that all the succeeding Hundred-years divisible by 4, as the Years 1600, 2000, 2400, 2800, &c. should contain 366 Days; and the Centuries or Hundred-years not divisible by 4, as 1700, 1800, 1900, 2100, 2200, &c. should contain only 365 Days; the intermediate Years being reckoned as they were before in the *Julian Account*, or old Style. This Alteration was called the *Gregorian* or New Style, and followed by most of the *Christian States*. The *English* however continued to make use of the Old Style till the Year 1752, when the Calendar was corrected, and a Style nearly the same with the *Gregorian* introduced. But as the Equinox then happened one Day later than it did when Pope *Gregory* reformed the Style, eleven Days were ordered to be taken out of the Calendar, by calling the 3d of *September* the 14th; by which Correction, our Account of Time was rendered conformable to that of other *Christian Powers*, and the Feast of *Easter* celebrated according to the original Intention of the Council of *Nice*.

The Calendar now in Use with us and other *Christian States* consists of 12 Months, called, *January, February, March, April, May, June, July, August, September, October, November, December*, each consisting of a certain Number of Days, which may be easily remembered by the following Distich:

Thirty Days hath *September, April, June, and November*;
February hath twenty eight alone; all the rest have thirty-one.

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But every fourth Year, which consists of 366 Days, *February* hath 29 Days. This additional Day was intercalated in the old *Roman* Calendar immediately after the 24th of *February*, then called *The Sixth of the Calends of March*, and, being that Year reckoned twice over, the Year was called *Bisfixtile*, or *Leap-year*.

There is no Difficulty in finding whether any Year be a common or Leap-year; all that is requisite being to divide the Year by 4: if nothing remains it is Leap-year, but if 1, 2, or 3 remain, it is the first, second, or third Year after.

Example 1. *Is the Year 1761 a Leap-year or not?*

$$\begin{array}{r} 4) 1761 \text{ (440} \\ \underline{16} \\ 16 \\ \underline{16} \\ 1 \end{array}$$

The 1 remaining shews, that the Year 1761 is the first Year after Leap-year.

Example 2. *Is the Year 1764 a Leap-year or not?*

$$\begin{array}{r} 4) 1764 \text{ (441} \\ \underline{16} \\ 16 \\ \underline{16} \\ 4 \\ \underline{4} \end{array}$$

From the Work it appears that the Remainder is Nothing, and therefore that the Year 1764 is Leap-year.

But the Division of the Years into Months, and the Months into Days, was not sufficient for the Purpose of keeping an accurate Account of Time; the Day is therefore divided into 24 equal Parts, called Hours; the Hours into 60 equal Parts, called Minutes; the Minutes into 60 equal Parts called Seconds, &c. The Year is also divided into Weeks, each Week containing 7 Days, and consequently a common Year contains 52 Weeks and one Day. So that if the Year began on a *Monday*, it will also end on a *Monday*, and the next will begin on a *Tuesday*, &c.

It has long been a Custom to mark the seven Days of the Week with the seven first Letters of the Alphabet, always placing A against the first of *January*, B against the second, C against the third, D against the fourth, E against the fifth, F against the sixth, and G against the seventh, and so on through the Year; by which Means whatever Letter stands against any particular Day of the Week in the first Series, and the same Year, will point out the same Day throughout the Year. Thus, if the first of *January* happens on a *Thursday*, against which the Letter A is placed, the same Letter will point out all the *Thursdays* in the Year: And that Letter answering to the *Sunday* is called the Dominical Letter, and may easily be found by the following

Rule. To the given Year add it's 4th Part, divide the Sum by 7, subtract the Remainder from 7, and the last Remainder will be the Index of the Letter in a common Year; but in Leap-year the Letter so found will only serve till the 24th of *February*, and the next, in a retrograde Order, will be the Dominical Letter for the Remainder of the Year.

Example 1. *What is the Dominical Letter for the Year 1761?*

	1761
It's 4th Part	440
	7)2201(314
	21
	10
	7
	31
	28
	3
Then from	7
Take	3
	4

And the Remainder shews that the 4th Letter in the Series, viz. D, is the Dominical Letter for the Year 1761.

Example

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Example 2. *What is the Dominical Letter for the Year 1764?*

$$\begin{array}{r}
 1764 \\
 \text{It's 4th Part } 441 \\
 \hline
 7)2205(315 \\
 \underline{21} \\
 10 \\
 \underline{7} \\
 35 \\
 \underline{35}
 \end{array}$$

The Remainder 0 being subtracted from 7, leaves the same Number, and shews that the 7th Letter, *viz.* G, is the Dominical Letter, but, being Leap-year, there are two, *viz.* G and A, the latter serving till the 24th of February, and the former all the rest of the Year.

The Solar Cycle, or Cycle of the Sun, is a Period of 28 Years, in which all the Varieties of the Dominical Letters will have happened, and the same Order of Letters will return as as before. But it must be remembered, that this Series, which was always constant in the *Julian* or old Account of Time, is, in the *Gregorian*, or new, interrupted every hundredth Year, which will then be common Years, except the four-hundredth, which will be a Leap year, as in the old Account of Time. The first Interruption, therefore, will not happen till the Year 1800, which will be a common Year, and consist only of 365 Days.

If this Cycle had commenced with the *Christian Era*, the Method of finding it would have been to divide the current Year by 28, and the Remainder would have been the Year required; but that was not the Case, the first Year of Christ happened in the tenth Year of the Cycle; we must therefore observe the following

Rule.] Add 9 to the given Year, and divide the Sum by 28; the Remainder will be the Year of the Cycle required.

Example.

Example. What is the Cycle of the Sun for the Year 1761?

$$\begin{array}{r}
 1761 \\
 \text{Add } 9 \\
 \hline
 28)1770(63 \\
 \underline{168} \\
 90 \\
 \underline{84} \\
 6
 \end{array}$$

6 Answer.

The Lunar Cycle, or Cycle of the Moon, is a Period of nineteen Years, containing all the Variations of the Days on which the new and full Moons happen, after which they fall on the same Days they did nineteen Years before. Consequently, by calculating the new and full Moons for nineteen Years, the new and full Moons either past, present or to come, are also known. This Cycle was invented by *Meton*, the *Athenian*, and thence frequently called the *Metonic Cycle*. But though the new and full Moons will happen on the same Day they did nineteen Years before, yet they will not happen at the same Time of the Day, but 1 Hour, 28 Minutes, 15 Seconds sooner, which, in 310 Years, will amount to one whole Day; and this created great Confusion in the old Method of computing Time, but was rectified by the late Reformation in the Calendar. The Years of this Cycle were annexed to the old Calendars in golden Characters, and thence called the *Golden Number*, and often the *Prime*. In order to find it observe this

Rule.] Add 1 to the Year of our Lord, and divide the Sum by 19; the Remainder will be the Prime, or Golden Number required.

Example. What is the Golden Number for the Year 1761?

$$\begin{array}{r}
 1761 \\
 \underline{1} \\
 19)1762(92 \\
 \underline{171} \\
 52 \\
 \underline{38} \\
 14
 \end{array}$$

14 The Golden Number required.

It

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It has been found by accurate Observations, that the Solar Year exceeds the Lunar by 10 Days, 21 Hours, and 19 Seconds, or 11 Days nearly, which are therefore called *Epacts*, or *intercalary Days*; therefore the Epact of any Year is the Age of the Moon on the first Day of that Year; and as the Interval of Time between new Moon and new Moon is nearly thirty Days, we may easily find the Moon's Age any Day in the Year by the Help of the Epact. And as the Epact increases 11 Days every Year, and is 0 when the Golden Number is 1, the Epact may be readily found by the following

Rule.] Multiply the Golden Number by 11, and divide the Product by 30; subtract 11 from the Remainder, and the Residue is the Epact required; but if the Remainder be less than 11, add 19 to it, and the Sum will be the Epact.

Example 1. *What is the Epact for the Year 1761?*

The Golden Number for the Year 1761 is 14

Multiply by 11

30)154(5

150

4

Add 19

The Epact 23

Example 2. *What is the Epact for the Year 1765?*

Golden Number for that Year 18

11

30)198(6

180

18

Subtract 11

The Epact 7

N. B. This Rule for finding the Epact will hold good till the Year 1900, and no longer.

The Epact being known, the Age of the Moon may be readily found by the following

Rule.

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Rule.] Add the Epact, Number of the Month, and the Day of the Month, together; and the Sum, if less than 30, is the Moon's Age; but, if greater, 30 must be taken from it as often as possible, and the Remainder will be the Moon's Age.

The Numbers of the Months are these:

6.	2.	1.	2.	3.	4.	5.	6.	8.	8.
Jan.	Feb.	March,	April,	May,	June,	July,	Aug.	Sept.	Oct.
10.	10.								
Nov.	Dec.								

Example. *What is the Moon's Age on the 1st of March 1761?*

The Epact is	23
No. for the Month	1
Day of the Month	1

The Moon's Age required 25

Note, The Moon's Age is reckoned from the Conjunction, or Change of the Moon.

Example 2. *What is the Moon's Age on the 22d of November, 1765?*

The Epact is	7
No. of the Month	10
Day of the Month	22

	39
Subtract	30

The Moon's Age 9

The *Jews* were commanded by God himself (See *Exod.* ap. xii. 6.) to celebrate the Passover in the first Month, on the 14th Day of that Month at Even. But as the *Jewish* Months were Lunar, the 14th Day was always the Day of the Full Moon; and this Full Moon, at the Time our Saviour's Crucifixion, happened on the 3d of *April*, being the first Full Moon after the vernal Equinox. And, in Obedience to this Command, the primitive Fathers of the Church ordered, that *Easter* should be celebrated on the first Sunday after the first Full Moon that happened after the vernal Equinox, which at the Time of the Council

of Nice, when this Order was made, fell upon the 21st of *March*, nearly at the same Time it now happens according to the reformed or New Style. Consequently this Reformation in the Calendar has caused the Feast of *Easter* to be celebrated according to the original Design of the ancient Fathers. From this Order of the *Nicene Council* it follows, that *Easter-Day* can never happen before the 22d of *March*, nor after the 28th of *April*, but may fall on any of the intermediate Days, and may be easily found by the following

Rule.] Find the Epact for the Year proposed, and if it be less than 24, subtract it from 44; but if it exceeds 24, subtract it from 74; and if the Epact be just 24, take it from 73: Also, if the Epact be 25, and the Golden Number between 12 and 19, both Numbers inclusive must be taken from 73, the Remainder will be *Easter Limit*, or the Day of the Paschal full Moon. If this Limit be less than 32, the full Moon is in *March*; but if it exceeds 31, it is in *April*: The *Sunday* after this full Moon is *Easter-Day*.

Example 1. *I would have Easter-Day for the Year 1762.*

The Epact for 1762 is 4, subtract it therefore from 44, and the Remainder is 40; from which take 31, and the Remainder 9 is *Easter Limit*, that is, the Paschal full Moon preceding *Easter-Day*. But the 9th of *April* in the Year 1762 is *Friday*; consequently the *Sunday* following, namely, the 11th of *April*, is *Easter-Day*.

Example 2. *When will Easter be celebrated in the Year 1764?*

The Epact for the Year 1764 is 26; which taken from 74, leaves 48; from which subtract 31, and the Remainder 17 shews, that *Easter Limit* happens on the 17th of *April*; but the 17th of *April* that Year is *Tuesday*; consequently, the next *Sunday*, namely, the 22d of *April*, is *Easter-Day*.

When the Moon is in Conjunction with the Sun, that is, at the Time of her changing, she comes to the Meridian, or directly South of us, at the same Time with the Sun, that is at Noon; and, on the Contrary, at opposite Times when she is at full, she is South at Midnight. Therefore between the New and the Full she comes to the Meridian before Midnight, and when past the Full, after,

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in the Morning. Also, at the Time of the Change she rises nearly at the same Time with the Sun, and at Full about the Time of Sun-setting. Hence we are taught a very easy Method of finding the Moon's Southing; for as there are, in round Numbers, 15 Days between the Change and Full; and as the Moon comes to the South 12 Hours later at the Full than at the Change; the Time of her Southing will be found by the following

Rule.] Multiply the Moon's Age by 12, and divide it by 15, or, which is the same Thing, multiply it by 4, and divide it by 5, and the Quotient will be the Hours, and the Remainder, if any, will be the additional Minutes.

Example 1. What Time will the Moon come to the South on the 1st of March 1761?

The Moon's Age, as found before, is 25

$$\begin{array}{r} 4 \\ \hline 5 \overline{) 100} \quad (20 \\ 10 \end{array}$$

That is, at Eight in the Morning, reckoning from Noon, as the Moon's Age was reckoned from the Change; but if we had subtracted 15 from it, the Days before she was at Full, and multiplied the Remainder 10 by 4, and divided it by 5, as above, it must have been reckoned from Midnight; and the Answer would have been the same, viz. Eight in the Morning.

Example 2. What Time will the Moon come to the South on the 22d of November, 1765?

The Moon's Age then is

$$\begin{array}{r} 9 \\ 4 \\ \hline 5 \overline{) 36} \quad (7 \\ 35 \\ \hline 1 \\ 12 \\ \hline 12 \end{array}$$

Answer, at 12 Minutes after 7 in the Evening

Besides the Cycles already explained, there is another that has no Regard to the Celestial Motions, called the

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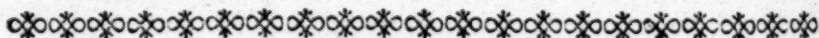
Roman Indiction, consisting of 15 Years: And as 3 Years of this Cycle were elapsed at the Birth of *Christ*, it is easily found by the following

Rule.] Add three to the given Year, and divide the Sum by 15; the Remainder will be the Year of the Cycle, and the Quotient shew the Number of complete Periods that have elapsed since the Birth of *Christ*.

Example. *What is the Roman Indiction for the Year 1761?*

$$\begin{array}{r}
 1761 \\
 \text{Add } 3 \\
 \hline
 15 \overline{) 1764} \text{ (117} \\
 \underline{15} \\
 26 \\
 \underline{15} \\
 114 \\
 \underline{105} \\
 9
 \end{array}$$

Answer 9, and 117 complete Periods have elapsed since the Birth of *Christ*.



Of MEASURING.

THE Magnitudes, or Objects to be measured, are of two Kinds, Superficies and Solids. In measuring Superficies, the Surface only, *viz.* the Length and Breadth is regarded; but in Solids, the Depth, or Thickness, is also to be considered. We shall, therefore, explain each distinctly, and then shew how the Rules are reduced to Practice.

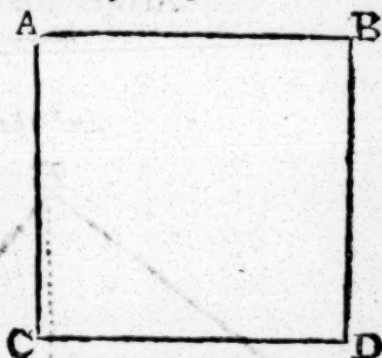
Of Measuring SUPERFICIES.

The Art of measuring Superficies consists in finding how many square Inches, Feet, Yards, &c. any flat Substance as a Board, a Piece of Glass, &c. contains, which is called its Area, or Content; and will be various according to the Form and Dimensions are different. But it must be careful

carefully remembered, that in whatever Measures the Dimensions are taken, the Area, or Content, will be in the same Denomination: That is, if the Dimensions are taken in Feet, the Content will be in Feet; if in Inches, the Content will be Inches, and the same of any other Measure.

1. To find the Area, or Content, of a Square.

A Square is a regular Figure limited by 4 right Lines, all equal and perpendicular to one another. Thus the Figure in the Margin *ABCD* is a Square, limited by the 4 right Lines *AB*, *AC*, *CD*, and *BD*, which are all of the same Length, and perpendicular to one another.



Rule.] Multiply any one of the Sides into itself, and the Product will be the Area required.

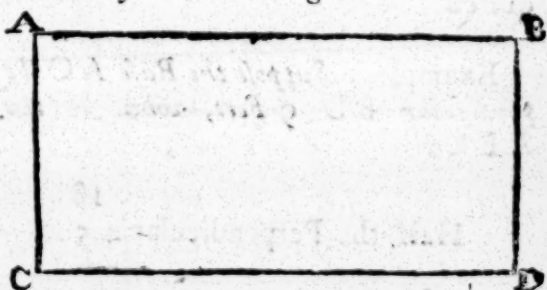
Example. Suppose the Line at *B* be 6 Feet, what is the Area or Content, of the Square *ABCD*?

6
6

—
Answer 36 Feet.
—

2. To find the Area of a Parallelogram.

A Parallelogram is, like the Square, composed of four right Lines perpendicular to one another, but not all of equal Lengths. Thus the Figure *ABCD*



is a Parallelogram, or, as it is sometimes called, a long Square; in which the Lines are not all equal to one another, although they are all perpendicular; but the Line *AB* is equal to the Line *CD*, and *AC* to *BD*.

Rule.] Multiply the Length *AB* by the Breadth *AC*, and the Product will be the Area, or Content, required.

N 3

Example.

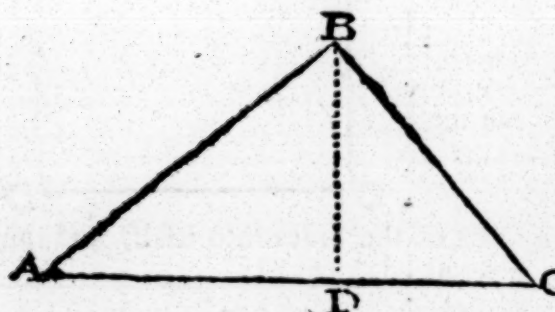
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Example. Suppose the Length AB be 18 Feet, and the Breadth 9, what is the Area, or Content, of the Parallelogram $ABCD$?

$$\begin{array}{r} 18 \\ \times 9 \\ \hline \end{array}$$

Answer 162 Feet.

3. To find the Area of a Triangle.



A Triangle is a Figure whose Area is contained under three Lines. Thus ABC is called a Triangle, and the dotted Line BD is called a Perpendicular, from it's be-

ing perpendicular to the Base AB , and measuring the Height of the whole Triangle.

Every Triangle is equal to half a Parallelogram of the same Base and Height; consequently the Area of a Triangle may be found by the following

Rule.] Multiply the Length of the Base by half the Perpendicular, and the Product will be the Content required.

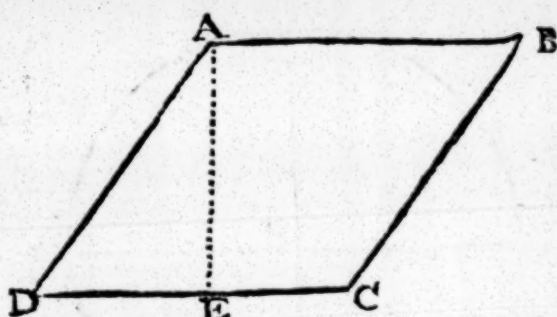
Example. Suppose the Base AC be 18 Feet, and the Perpendicular BD 9 Feet, what is the Area of the Triangle ABC ?

$$\begin{array}{r} \text{Half the Perpendicular } 4.5 \\ \times \text{Base } 18 \\ \hline 90 \\ + 72 \\ \hline \end{array}$$

Answer 81.0 Feet.

4. To find the Area of a Rhombus.

A Rhombus is a Figure resembling that of a Diamond, having four equal Sides, but not perpendicular to one another: That is, a Rhombus is a Square moved out of it's right Position. Thus the Figure annexed $ABCD$, is a Rhombus; the dotted Line AE is it's Breadth, or perpendicular Height; and the Area may be found by the following



Rule.] Multiply the Base DC , by the Breadth, or Perpendicular AE ; the Product will be the Content.

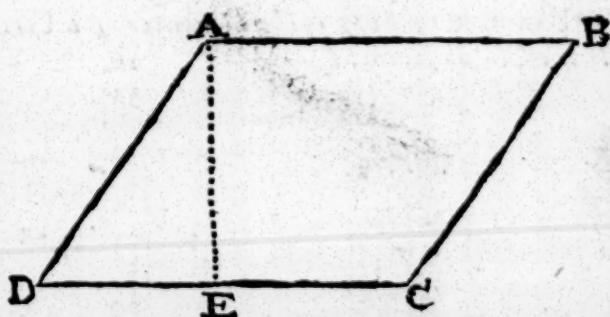
Example. Suppose the Base DC be 21 Feet, and the Perpendicular AE 16 Feet, what is the Content?

$$\begin{array}{r} 21 \\ 16 \\ \hline 126 \\ 21 \\ \hline \end{array}$$

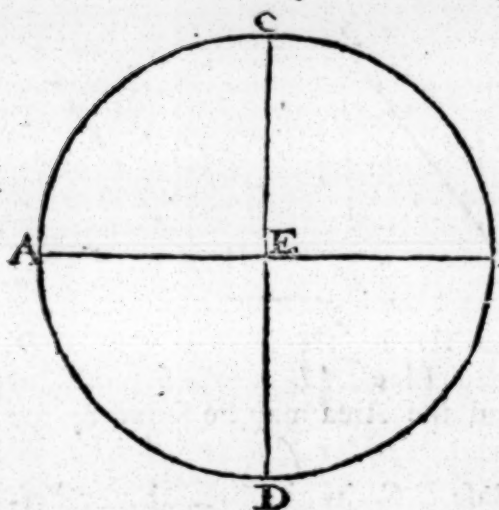
Answer 336 Feet.

5. To find the Area of a Rhomboides.

A Rhomboides is a Parallelogram moved out of it's Place. Thus the Figure $ABCD$ is a Rhomboides, and the dotted Line AE it's



greatest Breadth, or a Perpendicular to the Sides of AB and CD . The Area is found by the same Rule as that given above for the Rhombus, and therefore needs no Example.

6. *To find the Area of a Circle.*

A Circle is a regular Figure, whose Area is bounded or limited by one curve Line, called the Circumference or Periphery. Thus the annexed Figure is a Circle, and the curve *ACBD*, that bounds it, is called it's Circumference or Periphery. A Line drawn through the Center, and terminated on each Side by

the Periphery is called the Diameter. Thus the Line, *AEB*, or *CED*, is called a Diameter. Half the Diameter is called the Radius, being the Distance between the two Points of the Compasses when the Circle is described: And the Point in which the Foot of the Compasses rests while the other is turned round, is called the Center.

The Diameter of every Circle is to it's Circumference as 7 is to 22, or as 1 to 3. 14. 16. Hence, if either the Diameter or Circumference be given, we can find the other by the following

Rule] If the Diameter be given, multiply it by 22, and divide the Product by 7; the Quotient will be the Circumference: But if the Circumference be given, multiply it by 7, and divide it by 22, and the Quotient will be the Diameter.

Example 1. Suppose the Diameter of a Circle 16 Inches, what is the Circumference?

$$\begin{array}{r}
 16 \\
 \times 22 \\
 \hline
 32 \\
 320 \\
 \hline
 352
 \end{array}$$

$$7 \overline{) 352} \text{ (50.28}$$

$$\begin{array}{r}
 35 \\
 20 \\
 14 \\
 \hline
 60 \\
 56 \\
 \hline
 4
 \end{array}$$

Answer 50 Inches, and 28 hundredth Parts of an Inch.

Example 2. Suppose the Circumference of a Circle be 74 Inches, what is the Diameter?

$$\begin{array}{r}
 74 \\
 7 \\
 \hline
 22) 518 \quad (23.5 \\
 44 \\
 \hline
 78 \\
 66 \\
 \hline
 120 \\
 110 \\
 \hline
 10
 \end{array}$$

Answer 23 Inches and a Half.

These Things being premised, the Area of any Circle may be found by the following

Rule.] Multiply half the Circumference by half the Diameter; the Product is the Area required.

Example. Suppose the Diameter of a Circle be 16 Inches, and consequently it's Circumference 50.28, what is it's Area?

$$\begin{array}{r}
 25.14 \text{ half the Circumference,} \\
 8 \text{ half the Diameter.} \\
 \hline
 201.12 \\
 \hline
 \end{array}$$

Answer 201 Inches, and 12 hundredth Parts of an Inch.

But the Area of a Circle may be found something nearer the Truth by the following

Rule] Square the Diameter (that is, multiply it into itself) and multiply that Product by .7854 (the Area of a Circle whose Diameter is 1) and the last Product will be the Content required.

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Example. *What is the Area of a Circle whose Diameter is 16 Inches?*

$$\begin{array}{r}
 16 \\
 16 \\
 \hline
 96 \\
 16 \\
 \hline
 256 \\
 .7854 \\
 \hline
 1024 \\
 1280 \\
 2048 \\
 1792 \\
 \hline
 201.0024
 \end{array}$$

Nearly the same as before, the whole Difference consisting in the decimal Parts of the Inch: Consequently the first Method is sufficiently accurate for practical Mensuration.

Before we proceed farther, it may not be amiss to define the several Lines applied to the Circle, and shew the Method of constructing the Lines of Chords, Sines, Tangents, and Secants, so extensively useful in every Part of the Mathematics.

If a Circle be divided into two Parts by a Diameter, each of these Divisions will be a Semi-circle. Thus, in the Figure annexed *DCAB* is a Semi-circle.

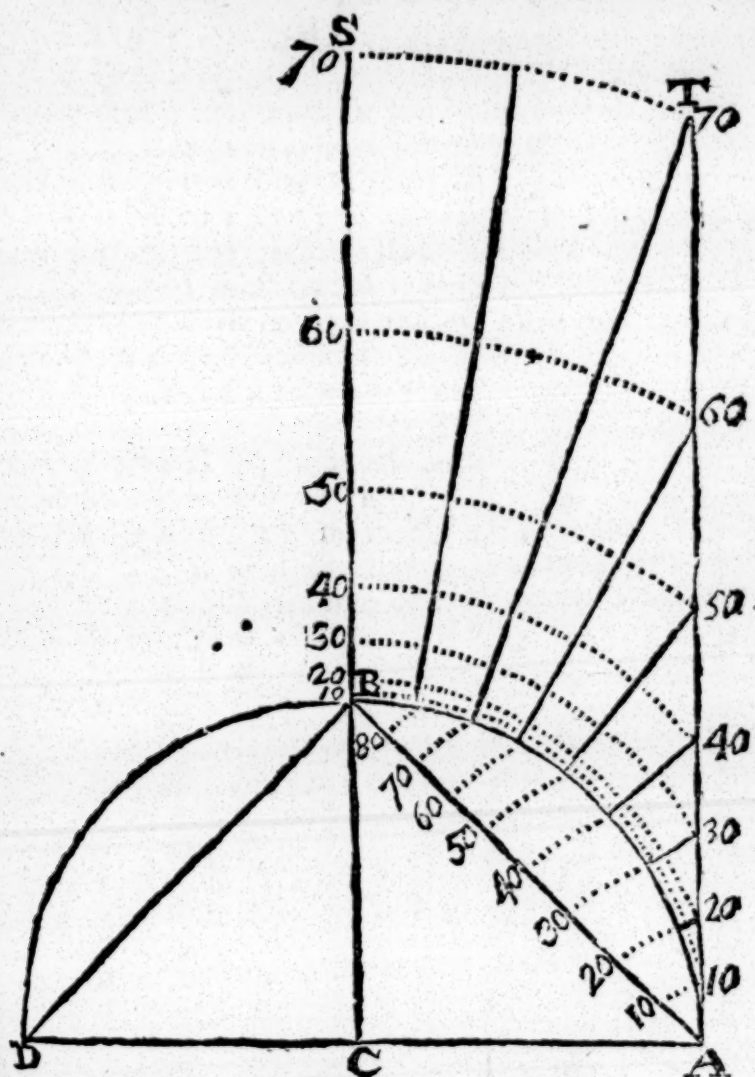
If the Diameter be crossed at Right Angles by another Diameter, it will divide the Circle into four Parts, called Quadrants.

The Chord of an Arch is a Right Line connecting the Extremities of the Arch together. Thus the strait Line *AD* is the Chord of the Arch *AB*.

The Sine of an Arch is a Right Line drawn from one End, or Termination, of an Arch, perpendicular to the Radius drawn to the other Extremity of the Arch. Thus the Line *BC* is the Sine of the Arch *BA*.

The Tangent of an Arch is a Right Line drawn perpendicularly from one End of the Diameter, touching one

End
the C
Th
the C
Th
Divide
ree i
to C
Sen
o.
Thi
Chords
ne fol
End



End of the Arch, and limited by a Right Line drawn from the Center through the other End of the Arch.

The Secant of of an Arch is a Right Line drawn from the Center to the Extremity of the Tangent.

The Circumference of every Circle is supposed to be divided into 360 equal Parts, called Degrees; every Degree into 60 equal Parts, called Minutes; every Minute into 60 equal Parts, called Seconds, &c. Consequently, a Semi-circle contains 180 Degrees, and a Quadrant 90.

This being premised, the Construction of the Lines of Chords, Sines, Tangents, Secants, &c. is performed in the following Manner :

Divid

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Divide the Semi-circle $ABDC$ into two equal Parts, by the Radius BC .

Divide the Arch of the Quadrant AB into nine equal Parts, and each Division will answer to 10 Degrees.

Draw the Right Line AB , and setting one Foot of the Compasses in A , extend the other to the several Divisions, and describe the small Arches, 10, 20, 30, 40, 50, &c. Then will the Line AB be a Line of Chords.

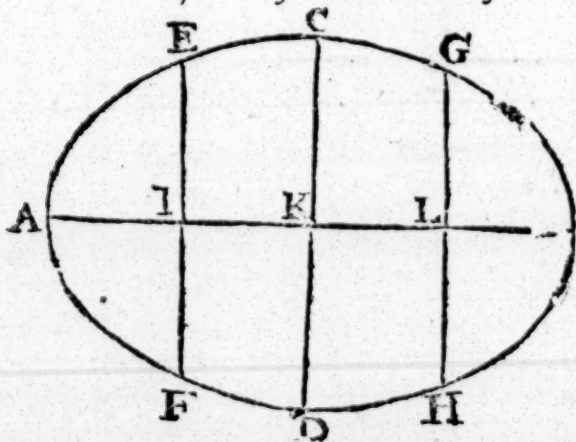
Draw Lines from the Divisions on the Limb of the Circle perpendicularly to CA , which will be the Sines of their respective Arches. These are not drawn in the Figure, to prevent Confusion.

From A , the extreme Point of the Diameter, raise the Perpendicular AT , and from the Center C , through the several Divisions of the Quadrant AB , draw Lines till they cut the Tangent AT ; so will the Line AT become a Line of Tangents, which must be numbered from A towards T .

Set one Foot of the Compasses in C , and extend the other to the several Divisions on the Line AT , describing the Arches 10, 20, 30, &c. and the Line BS will become a Line of Secants, which must be numbered from B towards S .

Take the several Divisions from the Figure, and set them off on a Ruler fitted for that Purpose, and you will have what is usually called a plain Scale, of great Use in every part of practical Mathematics.

7. *To find the Area of an Ellipsis.*



An Ellipsis, or Oval, is an oblong or imperfect Circle, as the Figure in the Margin. The longer Diameter AB , is called the transverse Diameter, and the shorter, CD , the conjugate

Diameter. The Ellipsis has two Centers, I and L , called Focuses, and the Right Line EIF , or GLH , the Latus Rectum, or Right Parameter, because

because all other Lines drawn in the Ellipsis, parallel to the conjugate Diameter, are regulated by it. The Ellipsis is described mechanically about the two Centers *I* and *L* in the following Manner — Place two Pins in the Points *I* and *L*, and round them a doubled Thread, extending it to *C*, where make a Knot, and fasten a Pencil; then, with an even Hand, move the Pencil round, and it will describe the curve Line of the Ellipsis.

These Things being premised, the Area of the Ellipsis is found by the following

Rule.] Multiply the transverse Diameter by the Conjugate, and that Product by the Decimal .7854: The last Product will be the Area required.

Example. Required the Area of an Ellipsis whose transverse Diameter is 36 Inches, and the Conjugate 15?

$$\begin{array}{r}
 36 \\
 15 \\
 \hline
 180 \\
 36 \\
 \hline
 540 \\
 .7854 \\
 \hline
 2160 \\
 2700 \\
 4320 \\
 3780 \\
 \hline
 424.1160
 \end{array}$$

Answer 424 Inches, and something more than 1 Tenth of an Inch.

Of measuring SOLIDS.

Having explained the Method of measuring Superficies, we now come to treat of Solids, or such Bodies as have Length, Breadth, and Thickness.

I. To find the Solid Content of a Cube.

A Cube is a square Solid, limited by six geometrical Squares, and is exactly in the Form of a Dye. The solid Content is found by the following

Rule.]

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Rule.] Multiply the Side into itself, and that Product by the same Side; the Result will be the solid Content required.

Example. Required the solid Content of a Cube, whose Side is 38 Inches?

$$\begin{array}{r}
 38 \\
 38 \\
 \hline
 304 \\
 114 \\
 \hline
 1444 \\
 38 \\
 \hline
 11552 \\
 4332 \\
 \hline
 \end{array}$$

Answer 54872

2. *To find the solid Content of a Parallelopipedon.*

A Parallelopipedon is a solid Figure contained under six Parallelograms; and it's solid Content is found by the following

Rule.] Multiply the Length by the Breadth, and that Product by the Depth; the last Product is the solid Content required.

Example. What is the solid Content of a Parallelopipedon which is 29 Inches in Length, 17 in Breadth, and 20 in Depth?

$$\begin{array}{r}
 29 \text{ Length} \\
 17 \text{ Breadth} \\
 \hline
 203 \\
 29 \\
 \hline
 493 \\
 20 \text{ Depth} \\
 \hline
 \end{array}$$

Answer 9860 solid Inches.

3. *To find the solid Content of a Pyramid.*

A Pyramid is a solid Figure, whose Base is a Polygon, and the Sides Triangles: The solid Content may be found by the following

Rule.]

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Rule.] Find the Area of the Base, as taught in measuring Superficies; and multiply that Area by one Third of the Height; the Product is the solid Content required.

Example. What is the solid Content of a square Pyramid, whose Side is 20 Inches, and Height 96?

$$\begin{array}{r}
 20 \\
 20 \\
 \hline
 400 \text{ Area of the Base.} \\
 32 \text{ One Third of the Height.} \\
 \hline
 800 \\
 1200 \\
 \hline
 \end{array}$$

Answer 12800 solid Inches.

4. To find the solid Content of a Globe, or Sphere.

Rule.] Find the Area of it's greatest Circle, multiply it by 4, and that Product by one sixth Part of it's Diameter: The Result will be the solid Content required.

Example. What is the solid Content of a Globe, whose Diameter, or Axis, is 16 Inches?

The Circumference of a Circle 16 Inches in Diameter is 50.28, and it's Area 201.12, (see before, Page 273) then,

$$\begin{array}{r}
 201.12 \\
 4 \\
 \hline
 804.48 \\
 2.6 \text{ one Sixth of the Diam.} \\
 \hline
 482688 \\
 160896 \\
 \hline
 \end{array}$$

Answer 2091.648 solid Inches.

5. To find the solid Content of a Cylinder.

A Cylinder is a round Solid, terminated by two Bases, which are equal Circles. The Stone-Roller of a Garden is a true Cylinder. The solid Content may be found by the following

Rule.]

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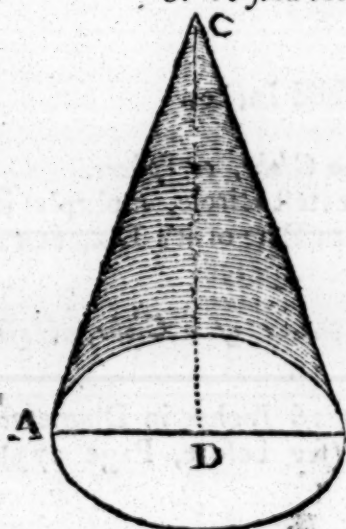
Rule.] Find the Area of the Circle that forms either of it's Bases, and multiply that Area by the Length of the Solid; The Product is the solid Content required.

Example. What is the solid Content of a Cylinder that is 60 Inches long, and 16 in Diameter?

Area of the Circle 16 Inches in Diameter, is as found before, see Page 273 } 201.12
60 Length.

Answer 12067.20 sol. In.

6. To find the solid Content of a Cone.



A Cone is a round Solid terminated in a Point called the Apex, and generated by the Revolution of a Triangle about one of it's Sides. Thus the annexed Figure is a Cone, C it's Apex, C D it's Height, and A D B the Diameter of it's circular Base. The solid Content is found by the following

Rule.] Find the Area of the Base, as before taught in measuring the Circle, and multiply that Area by one Third of the perpendicular Height; the Product will be the solid Content required.

Example. What is the solid Content of a Cone, the Diameter of whose Base is 16 Inches, and it's perpendicular Height 72 Inches?

Area of the circular Base found before 201.12

One Third of it's Height 12

40224
20112

Answer 2413.44 solid Inches

N. B. When you have found the solid Content in Inches you may reduce it into Feet by dividing by 1728, the Number of solid Inches in a Cubic Foot.

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Of measuring BOARDS and PLANKS.

Boards are measured as Superficies; and if their Breadth be the same throughout, nothing more is requisite, than measuring their Breadth and Length, by a Rule, and, multiplying these two Dimensions together, the Product will be the Content required.

Example. Suppose a Board be 2 Feet 3 Inches broad, and 12 Feet 6 Inches long, what is it's Area or Content?

$$\begin{array}{r} 12.5 \text{ the Length} \\ 2.25 \text{ Breadth} \\ \hline 625 \\ 250 \\ 250 \\ \hline \end{array}$$

Answer 28.125

Answer 28 Feet 18 Inches, as is found by multiplying the Decimal 125 by 144, the Inches in a square Foot.

If you reduce the Length and Breadth into Inches, multiply them together, and divide the Product by 144, the Number of square Inches in a Foot, the Answer will be the same. Thus in the above Example.

$$\begin{array}{r} 150 \text{ Length} \\ 27 \text{ Breadth} \\ \hline \end{array}$$

$$\begin{array}{r} 1050 \\ 300 \\ \hline \end{array}$$

$$\begin{array}{r} 144 \times 4050 \text{ (28)} \\ 288 \\ \hline \end{array}$$

$$\begin{array}{r} 1170 \\ 1152 \\ \hline \end{array}$$

18

Answer 28 Feet 18 Inches, the same as before.

But if the Board be broader at one End than the other, measure the Breadth at each End, add them together, and take the Half of that Sum, which will be the mean Breadth of the Board, and must be multiplied by the Length, as before.

Example.

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Example. Suppose a Board be 2 Feet 4 Inches broad at one End, 1 Foot 10 Inches at the other, and 20 Feet long, what is it's Content ?

$$\begin{array}{r}
 28 \text{ Inches} \\
 22 \text{ Inches} \\
 \hline
 40 \text{ Sum} \\
 \hline
 20 \text{ half Sum, or mean Breadth} \\
 240 \text{ Length} \\
 20 \text{ mean Breadth} \\
 \hline
 144) 4800 \text{ (33} \\
 \underline{432} \\
 480 \\
 \underline{432} \\
 \hline
 48 \text{ Answer } 33 \text{ Feet } 48 \text{ Inches.}
 \end{array}$$

The Use of GUNTER'S LINE.

THIS Line is commonly set on the Carpenters Plane Rule, and is two Lines, one set at the End of the other, to be used with Compasses.

How to prove the Line by the Compasses.

The Extent	1 to 2	is equal to the Distance from	2 to 4
	5 to 10		4 to 8
	4 to 8		3 to 6

How to Number upon the Line.

Note, That the Figures 1, 2, 3, 4, 5, 6, 7, 8, 9, sometimes signify themselves alone, sometimes 10, 20, 30, &c. sometimes 100, 200, 300, &c. sometimes 1000, 2000, &c.

To find 134 on the Line.

For the 100, take the Figure 1 on the Middle of the Line; for the 30, take 3 of the great Divisions; and for the 4, take 4 of the smallest Divisions; and you will find the Point to be over-against 14 Inches and 3 eighth Parts.

To find 750 on the Line.

For the 700, take the Figure 7 on the Line; for 50, take 5 of the great Divisions, and that is the Point.

To find 12 on the same Line.

Take the Figure 1 for 10; and for the 2, take 2 of the large Divisions; and that is the Point (or Center so called) to set one Point of the Compasses. In measuring Board or Timber, a Line of two Feet long, and Compasses a Foot long, are best.

Note, It would much shorten the Work, if the Measure, whether it be Inch, Foot, Yard, Pole, or the like, that you measure with, was divided into 10 equal Parts, and each 10th divided (or supposed to be divided) into 10 other Parts, as Occasion should require; but on the Carpenters Rule the Foot is divided into 12 Inches, and the Inch into 8 Parts.

Observe likewise, That if this Point of your Compasses fall off the Line in your Work, remove it to the same Figure or Place on the other Line; and the least Extent of the Compasses is commonly the best.

Multiplication by the Line.

Multiply 5 by 7. Set one Foot of the Compasses in, and extend the other to 5 upwards; with that Extent place one Foot in 7, and the other Foot will fall upon 35, the Product or Answer.

Division by the Line.

Divide 63 by 3. Extend from 3 to 1 downwards, that Extent will reach the same Way from 63 to 21, the Quotient or Answer.

Note, In multiplying always extend upwards, that is, from 1, 2, 3, &c. but in dividing extend downwards.

Divide 228l. among 16 Men.

Extend from 16 to 1 downwards, that Extent will reach the same Way from 228l. to 18l. for each Man.

Divide 750l. among 25 Men.

Extend from 25 to 1 downwards, that Extent will reach the same Way from 750l. to 30l. for each Man, the Answer.

When a Bushel of Wheat is worth 3s. 4d. or 40d. the Penny Wheaten Loaf should weigh 20 Ounces: What shall a Penny Wheaten Loaf weigh, when Wheat is 5s. or 60d. a Bushel?

Extend

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Extend from 60 (the Pence in one Bushel) to 20 downwards, that Extent the same Way will reach from 40 to 13 Ounces, and $\frac{1}{3}$ of an Ounce, the Answer.

If a Bushel of Rye cost 3 s. what will 40 Bushels cost?

Extend from 1 to 3 upwards, that Extent will reach the same Way from 40 to 120 Shillings.

If a Bushel of Malt cost 3 s. 6 d. what will 40 Bushels cost?

Extend from 1 to 3 and an Half upwards, that Extent will reach the same Way from 40 to 140 Shillings.

If 136 Masons in a Month be able to build a Fort, and such Expedition is required, that it must be finished in 8 Days how many Men must be employed upon that Work?

Extend from 8 upwards to 136, that Extent will reach the same Way from 28 to 476 Masons.

CROSS MULTIPLICATION,

WHICH is multiplying Feet and Inches together is a very ready Way to measure Buildings, Walling, Tiling, Plaistering, Land, &c. and presently learned.

One Example is sufficient; as,

Let the Length of any Wall, Flooring, Tiling, Paving, and the like, be 9 Feet 3 Inches one Way, and 7 Feet 6 Inches the other.

First, Upon Paper I set the Length and Breadth, with a Cross between them as in the Margin.

2dly. I multiply Feet by Feet, as 7 Times 9 is 63, which I set under the first Line.

3dly. Then I multiply (as the Cross directs) saying, 6 Times 9 is 54, which I divide by 12 always. Thus,

12) 54 (4 Feet, and the Remainder

48 is 6 Inches, which I
— set under 63—0

6

4thly, I multiply cross again, saying, 3 Times 7 is 21, which being small, for it is one 12 and 9, viz. 1 Foot 9 Inches, is to be set in the Margin. Thus far is enough for measuring Buildings.

F. I
9
X
7
—
63—
4—
1—
0—
—
69—

But, for more Exactness, you may multiply the Inches together, as 3 Times 6 is 18, but every 12 here is but an Inch; so I set down 1 Inch, and the 6 that remains of the 18, is Half an Inch: The Whole being added together, gives, for the Answer, 69 Feet, 4 Inches and an Half.

Note, That if you were to reduce the 69 Feet, or any other Number of Feet into Yards, divide it by 9, the Feet square in a Yard, and the Quotient shews the Yards.

Of measuring TIMBER or STONE.

IF the Timber or Stone to be measured be square, and of the same Dimensions throughout, it will be either a Square or a Parallelopipedon, and the solid Content found according to the Rules laid down according to these Figures. Measure with a Rule the Breadth and Depth, (if they are equal, the Figure is a Square; if not, a Parallelogram) and also the Length: Then multiply the Breadth and Depth into each other, and that Product by the Length; and the latter Product will be the solid Content required.

Example. Suppose a Piece of Timber or Stone be 2 Feet 3 Inches in Breadth, 2 Feet in Depth, and 15 Feet 4 Inches in Length, what is it's solid Content?

$$\begin{array}{r}
 27 \text{ Breadth in Inches} \\
 24 \text{ Depth in Inches} \\
 \hline
 648 \\
 184 \text{ Length in Inches} \\
 \hline
 2592 \\
 5184 \\
 648 \\
 \hline
 1728) 119232 (69 \\
 \underline{10368} \\
 15552 \\
 \underline{15552} \\
 0
 \end{array}$$

Answer 69 Feet.

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If the square Piece of Timber or Stone be tapering, the Dimensions should be taken in the Middle of the Piece, or, which will be nearly the same Thing, at both Ends, and added together; the Half of which will be the true Dimensions of the Piece, and the Content will be found in the same Manner as before.

Round Timber is measured by the Girt in the following Manner: They measure the Length of the Tree in Feet and Inches, and in the Middle girt it with a Chalk-Line, and take one Fourth of that Girt for the true Square, which must be multiplied by itself, and that Product by the Length, which will give the solid Content. But you must remember, if the Tree be not barked, to make an Allowance for it, which is generally one Inch in the Quarter of the Girt: That is, if the Quarter of the Girt of any Tree be 11 Inches, the true Quarter of the Girt, when the Bark is allowed for is 10 Inches.

Example. *Suppose a Tree be 40 Feet long, and the Quarter of the Girt 10 Inches, what is the Content?*

10 Quarter of the Girt.

10

100

480 Length in Inches.

8000

400

1728) 48000 (27

3456

13440

12096

1344

12

1728) 16128 (9

15552

576

Answer 27 Feet 9 Inches.

Of CARPENTERS Work.

THEIR principal Work (where Brick or Stone Houses are built) is Flooring, Partitioning, and Roofing: All which are measured by the Square of 10 Feet both Ways; so that every 100 square Feet is called a Square; but where Houses are wholly framed out of Wood, the Carpenters (out of the Owner's round Timber) will frame and set up a House at 7 or 8s. the Square. The straighter the round Timber, the less in Building.

A Load of round Timber being 50 Feet, it loseth by the Slabs and Sawing 6 or 7 Feet. Build it with white Oak, not red, having lain cut up two or three Years, or more.

To measure the Side of a House, or Roof, is done by the general Rule before for a Parallelogram; as, suppose the Product of the Sides be 326 Feet, that is, 3 Squares and 26 Feet.

A Gable is measured as the Triangle explained in measuring Superficies.

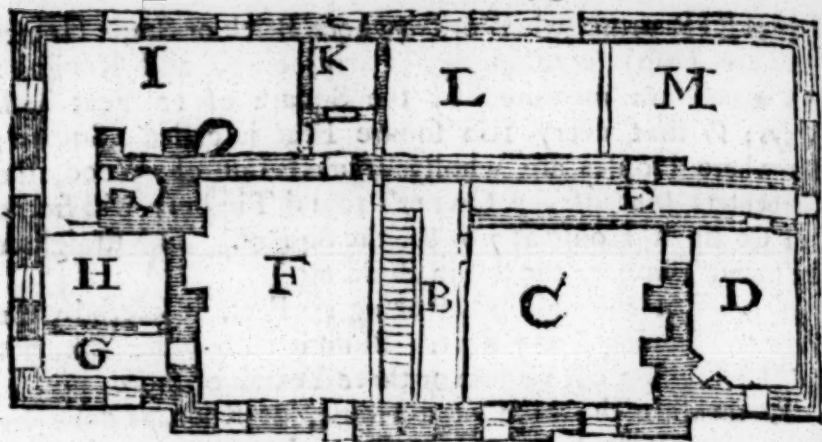
Note, That in the Square of Partitioning they reckon the Door-Frames and that Windows roofed into the Roof are not singly measured, but go into the plane Square; and it is accounted, amongst Workmen, to take up no more Timber than if there were no such roofed little Windows; nor do they deduct for Sky-Lights, and Holes for Chimney-Shafts, though the Funnels for great Chimneys may be 14 or 15 Inches within, and for Chamber-Chimneys 10 or 11 Inches.

The following Elevation and Plan will give the Reader some Idea of the Nature of designing Houses, and calculating the Expence that attends the Building of them.

The Elevation of a Design for a House.



Plan

Plan of the above Design.*Explanation of the above Place.*

- B.* Passage and Stairs, 8 Feet wide.
C. The Parlours, 18 Feet by 16 Feet.
D. Master's Cellar, or Store room.
E. Passage, 6 Feet 6 Inches wide.
F. Kitchen, 20 Feet by 18 Feet.
G. Passage, 4 Feet wide.
H. Mistress's Store-room, 12 Feet by 9 Feet.
I. Brew-house, Bake-house, &c. 26 Feet by 12 Feet.
K. Pantry, 8 Feet by 6 Feet.
L. Dairy, 20 Feet by 12 Feet.
M. Common Cellar, 20 Feet by 12 Feet.

The Body of the House *FBC* is two Stories of 10 Feet each, with Garrets in the Roof; and *GHIKLM* are no more than one Story, with Lofts in the shaded Roofs.

Estimate of the Expence.

The Body of the House contains 11 Squares and $\frac{3}{4}$, and may be built in a good Workman like Manner for 28*l.* per Square.

The shaded Parts *GHIKLM* contain 13 Squares, and may be built at 18*l.* per Square.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
11 Squares and $\frac{3}{4}$, at 28 <i>l.</i> per Square, is	329	0	0
13 Squares, at 18 <i>l.</i> per Square, is	234	0	0

Total Expence 563 0 0

The

The Use of the Carpenter's Plane Rule, in the Measuring of Board, Glass, &c. Shewing some of the Errors committed by the Carpenters in Measuring with the Rule.

FIRST, The Rule is 2 Feet long, and divided into 24 Inches, and every Inch into Half-inches, Quarters, and Half Quarters.

Secondly, The Table for underboard Measure is thus described :

1	2	3	4	5	6	1	7
12	6	4	3	2	2		
0	0	0	0	4	0		

This Line begins at 6 and goes on to 36, within 4 Inches of the End of the Rule to the Right-hand.

The Use.

F. I. Pts.

If a Board be	{ 1 2 3 4 5 6	Inches broad.	{ 12 0 0 6 0 0 4 0 0 3 0 0 2 4 $\frac{4}{8}$ 2 0 0	}	in Length will make a Foot square.

By this Table you may see, that a Board of four Inches broad will require 3 Feet in Length to make a Foot square.

Also, a Board of 5 Inches broad will require 2 Feet 4 Inches, and $\frac{4}{8}$ Parts of an Inch.

The Use of the Line.

If a Board be 9 Inches broad, how much of that Length will make a Foot square?

Look for 9 Inches upon the Line, (that is, at the Figure 9 upon the Line) then turn that Side downwards, and just against it, on the other Side of the Rule, you shall find 16 Inches ; which shews, that every 16 Inches of that Board in Length will make a Foot square.

If a Board be 9 Inches and a Half broad, what Length makes a Foot square?

O

First,

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First find 9¹ on the Side the Table is, and then see the Part of the Line on the other Side answering thereto, against which you will find 15 Inches and about $\frac{1}{6}$ Part.

A Pane of Glass that is 22 Inches broad, how much thereof will make a Foot square?

Look for 22 Inches on the Line, and right against it (on the other Side of the Rule) you shall find 6 Inches and almost one Half, and so much in Length of that Breadth will make a Foot square.

If a Table, or Board, be 33 Inches broad, how much in Length will make a Foot square?

Look for 33 Inches on the said Line, and right against it (on the other Side of the Rule) you shall find 4 Inches $\frac{3}{4}$, that is, 4 Inches, and 3 eighth Parts of an Inch, and so much thereof will make a Foot square.

At the other End of the Rule is the Table called Under-Timber Measure, thus described:

1	2	3	4	5	6	7	8	9
144	36	16	9	5	4	2	2	
0	0	0	0	0	0	11	2	

The Line begins at 8 and an Half, and so goes on, by Divisions, to 30.

The Use.

		Fe.	In.		
If a Piece of Timber be	1	Inches square	144	0	in Length will make a Foot solid.
	2		36	0	
	3		16	0	
	4		9	0	
	5		5	9 $\frac{1}{8}$	
	6		4	0	
	7		2	11 $\frac{1}{4}$	
	8		2	3	

N. B. On the Rule under 5 there is only stamped 5, 9, though it should be $\frac{1}{8}$ more; so under 7 Inches square there is only 2. 11 stamped, which should be 2. 11 $\frac{1}{4}$.

Here you may see, that a Piece of Timber that is 4 Inches square requires 9 Feet in Length to make a Foot solid.

The Square of any Piece of Timber at the End thereof being known, to find how much of that Piece in Length will make a Foot solid.

Example

Example. *A Piece of Timber that is 13 Inches square, how much in Length will make a Foot solid?*

Look for 13 Inches in the Line of Timber-Measure, and right against it, on the other Side of the Rule, you shall find 10 Inches, and somewhat less than a Quarter of an Inch, and so much of that Piece in Length will make a Foot solid, containing 1728 Inches to the Foot; but in a square Foot of Board only 144 Inches.

N. B. In Timber-Measure you must count the Inches from that End of the Rule that is next your Right hand, as in the Example above, when you turn the Rule over, you find almost 20 against the 21; which being counted from the Right-hand towards the Left, is almost 4 Inches.

Another. *If the Square of a Piece of Timber be 21 Inches, how much thereof in Length will make a Foot solid?*

Look for 21 Inches in the said Line, and against it you will find, on the other Side of the Rule, almost 4 Inches, if you reckon from the Right-hand towards the Left, and so much in Length will make a Foot solid.

Note, If squared Timber be broader at one End than the other, the usual Way is to add both Ends together, the (true Way for Broad Measure) and take Half thereof for the true Square; but if the Difference be very much, this Way is erroneous, (though much practised) which I shall prove by the following Example:

Suppose a Piece of Timber be 9 Inches thick, 15 Inches broad, and 12 Feet, or 144 Inches, long, how many square Feet are there in the same? The Answer will be 12 Feet by the Rule, but the true Content is 11 Feet and $\frac{1}{4}$.

Of BRICKLAYERS Work.

BRICKLAYERS measure their Walls commonly by the Rod of 16 Feet and an Half, (as Lang) the Rod containing 272 and a Quarter square Feet upon the Superficies of the Wall.

Their Materials, or Brick, made of a reddish Earth, ought to be dug before Winter, and not made till Spring, to be well seasoned with Frost; the Moulds, according to the Statute, ought to be within Side in Length 9 Inches, in Breadth 4 Inches and an Half, and in Thickness 2 and a Quarter; a Cart-load of Bricks is counted 500, and of Tiles 1000.

It is said, that a square Yard of well wrought Clay will make 7 or 800 Bricks, and that, out of the Owner's Clay, a Workman, for 6 or 7 Shillings the 1000, will make them without any farther Charge to the Owner.

But if you buy Brick or Tile, chuse such as are of a bright red Colour, and that will ring when knocked; but the blackish glazed Bricks are the best for Chimney Stacks.

Note, That the less Water you put into your Lime and Sand, the better will your Morter be, but it will require much more Labour in working it: For Morter to abide bad Weather, mix the Cinder-duft that comes from a Smith's Forge with it.

Digging Clay to make Bricks.

A solid Yard being 27 solid Feet, how many Yards are there in a Pit 18 Feet broad?

	27)	2880	(106
8 Feet deep		27	
144		180	
And 20 Feet in Length		162	Yards. Feet.
2880 Feet in all		18	— Answer 106 18

To measure Brick Walls.

Suppose a Wall to be in Length 120 Feet, and 13 Feet 3 Inches high, the Product will be 1590 Feet; which reduce into Rods, by dividing it by 272, omitting the $\frac{1}{4}$ of a Foot (as not regarded by Workmen) the Quotient gives 5 Rods, 3 Quarters, 26 Feet.

Note, That 136 Feet is Half a Rod, 68 a Quarter, and 204 Feet 3 Quarters of a Rod.

Or, Extend from 272 to 13 and a Quarter of the great Division on *Gunter's Line* downwards, that Extent will reach the same Way, from 120 to five Rods, and above $\frac{3}{4}$ Parts the Answer.

Having measured the Face of the Wall or House, on the Outside thereof, then measure the End thereof on the Inside, and make Deduction for Doors and Windows.

Note, If the Wall be either thicker or thinner than a Brick and an Half, it must be reduced into standard Measure, (that is, one Brick and an Half thick.)

The RULE.

Multiply the Number of Feet measured on the Face of the Wall, by the Number of Half the Bricks the Wall is of Thickness.

Thickness, one third Part of that Product gives the Number of Feet contained in the Wall, which reduce into Rods, by dividing it by 272, as above. By the Line :

How many Rods of Brick-work are there in 4085 Feet ?

Extend from 272 to 1 downwards, that Extent will reach the same Way from 4085, to about 15 Rods, Answer. Or thus; divide 4085 by 272, and the Quotient will be 15.

If a Wall be 9 Rods on the Outside, and 5 Half Bricks thick, how many Rods of a Brick and an Half are there in the Wall ? As 3 is to 5, so is 9 to 15, Answer. By the Rule :

Extend from 3 to 5, that Extent will reach the same Way from 9 to 15 Rods, Answer.

Charge of a Rod of Brick-work.

	£.	s.	d.
For 4500 Bricks at 15 s. the 1000	—	3	7 6
For 32 Bushels of Lime at 9 d.	--	1	4 0
For 3 Loads of Sand	—	0	5 0
Workmanship by the Great	---	1	2 0

£ 5 18 6

Feet in Height	1 Brick thick.	Brick and half thick.
1	0176	0264
2	0352	0528
3	0528	0792
4	0704	1056
5	0880	1320
6	1056	1584
7	1232	1848
8	1408	2112
9	1584	2376
10	1760	2640
11	1936	2904
12	2112	3168
13	2288	3432
14	2464	3696
15	2640	3960
16	2816	4224
17	2992	4488
18	3168	4752
19	3344	5016
20	3520	5280

A TABLE shewing the Number of Bricks, or very near, that a Wall may take up of 16 Feet and an Half long, of any Thickness, and to any Height, not exceeding 20 Feet.

The USE.

A Wall of under pinning a Rod in Length, and one Foot high.

Look in the Top of the Table for 1 Foot in the first Column, and against it is 176, shews, that so many Bricks will do it, at 1 Brick Length thick, and 264 at 1 Brick and an Half thick, as the Table sheweth at 2 Bricks thick double the Number 176, and so of the rest.

Note, That all Joists and Summers, that are to lie in Brick Walls ought to have their Ends run over with Pitch to preserve them

Of TILING.

TILING is measured by the Square or Foot, as the Carpenters Work.

<i>The Charge of a new Square of Tiling.</i>			£	s.	d.
For 750 Tiles, at 18 <i>d.</i> the 100	—	—	0	11	03
For 100 of 5 F. Lath, 7 nailed in 2 F.	—	—	0	02	00
For two Bushels of Lime burned	—	—	0	01	00
For Half a Peck of Oak Tile-pins	—	—	0	00	03
For 500 of Reparation Nails	—	—	0	00	10
For Half a Load of sifted Sand	—	—	0	01	00
For 7 Ridge-tiles, at 2 <i>d.</i> per Tile	—	—	0	01	02
Workmanship by the Great	—	—	0	03	00
Sum			£.	1	00 06

Note, The readiest Way to measure a tiled Roof is to tie a Stone to the End of a Line, and put it over the Ridge to reach from Eves to Eves, then measure the Line, and work as is shewn in the general Rule.

A Workman will find all Materials (in some Places) at 25 *s.* the Square; or repair old Tiling with new Lath, Morter, and new Tiles, where Need is, for about 12 *s.* the Square.

It is said, that a strait grained round Piece of Oak-Timber, 10 Inches square, may be rended into 400 Laths, and that a Workman will rend 1000 for 3 *s.*

Five Foot Lath is 5 Score to the 100, and four Foot Lath 120 to the 100.

A Piece of Timber (it is said) of 6 Inches and an Half broad, and 3 Inches and an Half thick, cuts 8 Eves Laths.

When the Morter is worn much out of your old Tiling, point it with Lime, Hair, and Sand, to prevent the Wind blowing them off, or Snow driving under the Tiling, for there it lodgeth on the Cieling under the Tiles (if cycled) and when it thaws may do much Damage to it.

Plain Tiles should be in Length 10 Inches and an Half, in Breadth 6 Inches and a Quarter, in Thickness Half an Inch and Half Quarter at the least.

Roof

Roof Tiles in Length 13 Inches, and the Thickness Half an Inch and Half a Quarter, at the least.

Gutter Tiles 10 Inches and an Half in Length, and he who sells any that are not so, forfeits to the Buyer double the Value, and is to be further punished, by 17 *Edw. c. 17.*

Of PLAISTERING.

PLAISTERING, or Cieling, is measured by the Yard square, or 3 Feet each Way, which is 9 Feet: The Length and Breadth being multiplied together.

To make Rough-cast bluish, work Lead Dust in the Morter, to be had at the Plumber's, and cast small Pebble-stones on the Plastering, before it is dry, and, when dry, colour it.

Note, That if you are about to measure the Plastering of most of the Rooms in an House, by the general Rule, do thus :

First, upon a Sheet of Paper draw 4 Columns, as (1) the Name of the Wall, lying East or West, &c. or Gable End (the Length in Feet and Inches) and the last Column for the Content in Yards, Feet, and Inches, done from the General Rule.

Having finished every Room, you may, if you will, prove your Work by *Gunter's Line*, thus :

A Wall cieled 4 Feet wide, and 7 Feet long.

Extend always from 9 (the Feet in a square Yard) to 4 the Width given, that Extent, the same Way, will reach from 7 to $3\frac{1}{9}$ Yards, the Length, which is the Answer.

Or you may multiply the Length 7 by the Breadth 4, and divide the Product 28 by 9, the square Feet in a Yard, and the Answer will be $3\frac{1}{9}$ Yards, as above.

Note also, In another Place of the Sheet of Paper, make four Columns more, for the several Deductions of Windows, Doors, Chimnies, and Hearths, and the like.

To reduce the several Products of Feet, divide them by 9, and the Quotient gives the Yards to be placed in the last Column.

Note, That Bricks, between Studs, will not keep out driving Rain, so well as Lathing and Plastering without Doors.

The Charge of a Cieling of 6 Yards.

	s.	d.
For 100 of five Foot Laths — — —	2	00
For 500 of Reparation Nails — — —	0	10
For 2 Bushels of Lime and Sand — — —	1	06
For 3 Pecks of Hair — — —	0	09
Workmanship, with Lathing, 3 <i>d.</i> the Yard — — —	1	06
Sum	6	07

PAVING with BRICK.

THIRTY-two common Bricks will just cover a Yard square, for which a Workman will find Lime and Sand, you will lay them at 8 *d.*

9 Inches the Length of a Brick.
 $4\frac{1}{2}$ the Breadth.

$4\frac{1}{2}$ the Superficies of 1 Brick.
 32 Bricks in all.

80
 120
 16

1296 the square Inches in 32 Bricks.

Or thus, 36 Inches in a Yard in Length.
 36 Inches in a Yard in Breadth.

216
 108

2196 the square Inches in a Yard square, which divide by $4\frac{1}{2}$, the Superficies of 1 Brick, and the Quotient will be 32.

Of PITCHING and PAVING.

PITCHING is also measured by the Yard. The Charge of Pitching 8 Yards, *viz.* a great Cart-load of Pebbles worth 4*s.* and a Cart-load of Gravel 2*s.* Workmanship $2\frac{1}{2}$ *d.* the Yard; but there will want more Gravel, if the Ground be not firm.

Paving

Paving with Free-stone, well smoothed, is worth 12 *d.* or 14 *d.* a Foot: But Marble-stone, finely polished, will cost 2 *s.* 6 *d.* a Foot.

Of JOINERS' Work.

JOINERS' Work is measured by the Yard square, like the Plaisterers', only where there is a Cornice (in a Room wainscoted) or swelling Pannels, and Mouldings, they take the Depth of the Room with a Line, denting it into the Hollows, and then measure the Line in Feet and Inches for the Height of the Room; and then measure round the Room with a four Foot Lath (as Plaisterers do for the more Expedition) and multiply the Length and Breadth, as in the General Rule, and the Product divide by 9, and the Quotient shews the Yards, from which deduct for Doors, Windows, and Chimney-pieces, &c.

In measuring Window-shutters (in a Room) being all of one Height, they measure the Height of one, and call that the Breadth; and for Length they measure the Breadth of them together, which are to be multiplied together, viz. the Length and Breadth by the said General Rule. Now suppose the Product is 240 Feet, 6 Inches.

The Joiner being paid for the Out-side of the Shutters for the Whole-work, so called; and for planing the other Side of the Shutters is called Half-work, to be paid at Half of the Price of the other.

Therefore the said Product for the best Side of the Shutters being 246 Feet, 6 Inches, to which add Half thereof, for the said Half work, makes 369 Feet, 9 Inches, to be reduced into Yards, by dividing it by 9, as before, and the Answer will be 41 Yards and $\frac{1}{2}$.

The same Way of measuring they observe for Wainscot Doors, and Cup-board Doors, and where they are planed on both Sides.

Lastly, If the Cheeks or Jambs of 3 Windows wainscoted be in Length, in the Whole, 62 Feet, and the Breadth 5 Inches, done by the General Rule, they make 25 Feet, 10 Inches.

Of GLAZIERS' Work.

THE Glazing of new Windows is measured by the Foot, plain Glazing 6 *d.* the Foot; new Leading 3 *d.* Repairing 2 *d.* a Foot; single Quarry fixing 1 *d.* the Glazier finding the Quarry.

A Quarry of ordinary Glafs is 6 Inches from Corner to Corner one Way, and 4 Inches the other, containing 12 Inches in all, and therefore 12 Quarries make a Foot.

To measure large square Panes of Glafs, see the Question in Timber-measure by Fractions.

Note, Let the Panes be rubbed well, when fixed in the Lead, with Linseed Oil, to keep out Rain.

If you have several Panes of Glafs, in one Room, all of one Height, lay a String along the Glafs of the Window, and take the Breadth of all of them together into one Sum, which call the Length; and the Height of one Pane, the Breadth; and work by the General Rule, not deducting for Ovals and half-round or crooked Windows, as in Stone-work, for they are all measured as if they were square, because of the Loss of Glafs, and the Trouble in fitting them.

A Foot of new Sheet Lead weighs sometimes 4, 5, 6, 7, 8, or 9 Pound.

A Yard square of new Sheet Lead is worth more or less, according to it's Weight, besides Solder at 9d. or 10d. the lb. The Exchange of old Sheet-Lead for new is, in some Places, 3 s. the Hundred Weight.

Of PAINTERS' Work.

THEIR Work is measured by the Yard square; but deducted in where the Brush goes.

Painting Wainscot with Oil-colour, thrice done over, 10d. the Yard, if Linseed Oil is not too dear, and 6d. the Light for large new Window-frames.

Note, That Linseed Oil, done over any Timber, both within and without Doors, preserves it from Worm and Weather, so as it be done over with a Brush in dry Weather, once every seven Years, without being ground with Colours, as the Glovers grind their Colours for Gloves.

Whites are, Flake-White, and White-Lead.

Blacks are, Lamp-Black, or the Soot that comes by burning Oil in Lamps, Cherry stones burned, or old Ivory Knife Hafts burned.

Reds are, Red Lead, Vermillion, Red-ocre, Indian Lake.

Greens are, Verdigris and Verditer.

Yellows are, Yellow Pinks and Yellow Ogres.

Brown is, Umber burned.

Gold Colour, is Orpiment.

To

To colour a Sign-post. Grind Spanish Brown and Red Lead thinly with Linseed Oil, and brush it over: When it is dry use White Lead twice, and, if it be not white enough, do it over again. Observe the same for Window Frames, Palisadoes, and the like.

Cleanse your Pencils and Brushes, before they are too dry, with hot Water and Soap, and if they are hard and dry, boil them in the same. Keep your Oil-Colour in Bladders tied close; and cover those in Pots, with Water, till you use them.

Priming Dial Boards, is the Brushing them over with Linseed Oil, thinly ground with Spanish Brown done over three or four Times (drying between) thicker and thicker of the Colour.

Oil for Dials: Boil Red Lead and Linseed Oil and a little Letharge of Gold, till it is almost as thick as a Syrup; when it is cold and well settled, pour the clearest into a Bladder, or Glass for Use; it is called the Fat Oil.

The Cold-size for Dials: Mix fine ground Yellow-ocre with the Fat Oil, so that when a Figure is made with it, it may be of that Thickness as to set itself smooth.

To mark out a Dial upon a Wall: Fix the Dial drawn upon Paper against the Wall with Nails, and you may mark out the Hour-lines to what Length you please; the Hour-lines may be drawn with Vermillion, or Lamp-black, ground with Fat Oil.

To draw golden Letters, or Figures, for the Hours: First draw them with a Pencil dipped in the Gold-size, which, when so dry as they will just stick to your Finger, but none come off, then, with a smooth edged Penknife, shape the Leaf gold to your Mind, and take it up with a Piece of Cotton-cloth, tied about the End of a Stick, and lay it on the Size, and press it down with the same Cotton; when it is dry, brush off the loose Gold with a Feather, and the rough Edge of the Letters smooth, with a Pencil dipped in red or black Colour.

To take any Colour out of your Work.

Take a little common Soap and lay on it; when dry, wash it with warm Water, and the Paint will come clean off.

Of surveying, or measuring, LAND.

NOTE, That 16 Feet and an half make a Pole or Perch; 160 square Poles, or 4 Roods, make an Acre of Land; 40 Poles make a Furlong, 8 Furlongs, or 17 Yards, make a Mile. Land

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Land is generally measured by a Chain of 4 Poles, or Perches, in Length, and divided into 100 equal Parts, or Links, 25 of which are a just Pole, or Perch; consequently, 10 square Chains, or 100,000 Links, make an Acre of Land. But though this Chain, called *Gunter's* Chain, from it's Inventor, be commonly used, yet Land may be measured by a Cart-Rope, or a common Pole, 16 Feet and an Half in Length; and we shall here add a Table for laying out an Acre of Land by it.

A T A B L E, showing how to lay out an Acre of Ground by a Pole of Ash, in a Pasture.

Breadth in Poles.	Length of the Acre.		Breadth in Poles.	Length of the Acre.	
	Poles.	Feet.		Poles.	Feet.
1	160	0	26	6	$2\frac{10}{100}$
2	80	0	27	5	$15\frac{5}{100}$
3	53	$5\frac{1}{2}$	28	5	$11\frac{1}{14}$
4	40	0	29	5	$8\frac{3}{8}$
5	32	0	30	5	$5\frac{2}{5}$
6	26	11	31	5	$2\frac{4}{62}$
7	22	$14\frac{1}{7}$	32	5	0
8	20	0	33	4	14
9	17	$12\frac{5}{8}$	34	4	$11\frac{1}{17}$
10	16	0	35	4	$9\frac{3}{7}$
11	14	9	36	4	$7\frac{1}{8}$
12	13	$5\frac{1}{2}$	37	4	$5\frac{3}{37}$
13	12	$5\frac{1}{3}$	38	4	$3\frac{9}{10}$
14	11	$7\frac{1}{4}$	39	4	$1\frac{9}{13}$
15	10	11	40	4	0
16	10	0	41	3	$14\frac{3}{82}$
17	9	$7\frac{2}{34}$	42	3	$13\frac{5}{44}$
18	8	$14\frac{2}{3}$	43	3	$11\frac{7}{86}$
19	8	$6\frac{1}{10}$	44	3	$10\frac{1}{2}$
20	8	0	45	3	$3\frac{1}{6}$
21	7	$10\frac{3}{14}$	46	3	$7\frac{1}{36}$
22	7	$4\frac{1}{2}$	47	3	$6\frac{5}{44}$
23	6	$15\frac{1}{3}$	48	3	$5\frac{1}{2}$
24	6	11	49	3	$4\frac{3}{8}$
25	6	$6\frac{8}{3}$	50	3	$3\frac{3}{16}$

Poles

Breadth in Poles.	Length of the Acre.			Breadth in Poles.	Length of the Acre.	
	Poles.	Feet.			Poles.	Feet.
51	3	2 $\frac{9}{34}$		66	2	7
52	3	1 $\frac{27}{26}$		67	2	6 $\frac{27}{26}$
53	3	$\frac{33}{100}$		68	2	5 $\frac{11}{17}$
54	2	15 $\frac{8}{9}$		69	2	5 $\frac{6}{23}$
55	2	15		70	2	4 $\frac{5}{7}$
56	2	14 $\frac{1}{7}$		71	2	4 $\frac{4}{71}$
57	2	13 $\frac{18}{57}$		72	2	3 $\frac{2}{3}$
58	2	12 $\frac{15}{29}$		73	2	3 $\frac{12}{73}$
59	2	11 $\frac{44}{53}$		74	2	2 $\frac{25}{37}$
60	2	11		75	2	2 $\frac{1}{3}$
61	2	10 $\frac{17}{61}$		76	2	1 $\frac{33}{33}$
62	2	9 $\frac{18}{31}$		77	2	1 $\frac{22}{77}$
63	2	8 $\frac{57}{63}$		78	2	0 $\frac{11}{13}$
64	2	8 $\frac{1}{4}$		79	2	0 $\frac{38}{79}$
65	2	7 $\frac{8}{15}$		80	2	0

The Use of the foregoing Tables.

Suppose the Length or Side of a Close, or Furlong, be 43 Poles, how much in Breadth will make an Acre?

Look for 43 in the first Column, and right against it is 3 Poles, 11 Feet, and $\frac{27}{86}$ Parts of a Foot, which is about 10 Inches and 3 Quarters in Breadth to make an Acre; twice which is two Acres, &c.

I will give you an Example whereby you may prove all, or any Part of this Table.

The Side being 43 Poles, according to the Example above, I divide 160, the Poles in one Acre, by 43, and the Quotient gives 3 Poles, $\frac{31}{43}$ Parts of a Pole.

Secondly, I multiply the 31 Parts by 16 $\frac{1}{2}$, the Feet in a Pole in Length, and the Product is 511 $\frac{1}{2}$.

43) 160 (3 Poles.

129

31

31

16 $\frac{1}{2}$

186

31

15 $\frac{1}{2}$ Half of 31.

511 $\frac{1}{2}$ Product.

Thirdly

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Thirdly, I divide the $511 \frac{1}{2}$ by 43 also, and the Quotient gives 11 Feet, and $38 \frac{1}{2}$ Remainder.

$$\begin{array}{r} 43) 511 \frac{1}{2} \text{ (11 Feet,} \\ \underline{43} \\ 81 \\ \underline{43} \\ 38 \end{array}$$

Fourthly, I multiply the Remainder $38 \frac{1}{2}$ by 12, the Inches in a Foot in Length, adding to the Product the Half of the 12 the Multiplier, and the Product is 462 Inches.

$$\begin{array}{r} 38 \\ 12 \\ \hline 76 \\ 386 \\ \hline 462 \text{ Inches.} \end{array}$$

Lastly, I divide the 462 by 43 also, and the Quotient gives 10 Inches, and, 32 remaining being gathered into one Sum, the Breadth is 3 Poles, 11 Feet, 10 Inches, $\frac{52}{3}$, which is almost $\frac{3}{4}$ Quarters of an Inch.

$$\begin{array}{r} 43) 462 \text{ (10 Inches,} \\ \underline{43} \\ 32 \end{array}$$

By this Method you may try any other Number in the Table.

A Table to lay out a square Acre of Land by Gunter's Chain.

Length Ch. Li.	Breadth, Ch. Li.
0 25	4 00
0 35	28 57 $\frac{1}{7}$
0 45	22 22 $\frac{2}{9}$
0 55	18 18 $\frac{2}{16}$
0 65	15 38 $\frac{1}{2}$
0 75	13 33 $\frac{1}{3}$
0 85	11 75 $\frac{3}{17}$
0 95	10 52 $\frac{1}{19}$
1 00	10 00
1 10	9 9 $\frac{1}{11}$
1 20	8 33 $\frac{1}{3}$
1 30	7 69 $\frac{3}{11}$

NOW to prove whether or no this Table be misprinted.

Suppose the Length of a Piece of Ground at the Side be 3 Chains 20 Links, how much in Breadth thereof will make an Acre?

Look for 3 Chains 20 Links in the first Column, and against it in the second Column is 3 Chains 12 Links and $\frac{2}{3}$ for the Breadth.

Or, always divide 100000, the Links in a square Acre, by the Length,

Length, which in this Example is 3 Chains 20 Links done as follows without the Table.

(1
12
148 (6 Ch. Li.
100000 (0 3 12 Breadth for
3222 [the Acre.

33
The Breadth is 3 Chains, 12 Links, and the Fraction $\frac{160}{320}$ is half a Link, because 160, the Remainder, is half 320, the Divisor.

How to measure Land by Gunter's Chain.

We have already observed that this Chain is 4 Poles in Length, or 22 Yards, which is 66 Feet, or 792 Inches; it is divided into 100 Links, at every 10 Links is a Brass Ring, for the more ready counting it in Measuring, so that it is no Matter which End goes foremost; and he who draws it should carry in his Hand 10 small Sticks, to stick in the Earth at every Chain's Length, and he who follows the Chain to gather up the Sticks.

Example. Suppose the Length of a Piece of Ground be 9 Chains 50 Links, the Breadth 6 Chains 25 Links, how many Acres, Roods, and Poles?

Multiply the Length by the Breadth as whole Numbers, and from the Product 593750 I cut off 5 Figures next the Right-hand, and the Remainder on the Left-hand are Acres; as you may see in the Margin.

The Reason of cutting off 5 Figures towards the Right-hand is, because 100,000 Links make a square Acre; so there being 5 Cyphers towards the Right hand, all the Figures over 5 towards the Left hand are Acres.

2dly, The remaining Figures 93750 so cut off from the 5 Acres, I multiply

Length		Breadth.	
Ch.	Li.	Ch.	Li.
1	40	7	14 $\frac{2}{7}$
1	50	6	66 $\frac{2}{3}$
1	60	6	25
1	70	5	88 $\frac{24}{27}$
1	80	5	55 $\frac{5}{9}$
1	90	5	26 $\frac{6}{9}$
2	00	5	00
2	10	4	76 $\frac{4}{20}$
2	20	4	54 $\frac{6}{18}$
2	30	4	34 $\frac{18}{23}$
2	40	4	16 $\frac{2}{20}$
2	50	4	00
2	60	3	84 $\frac{8}{13}$
2	70	3	70 $\frac{10}{7}$
2	80	3	57 $\frac{7}{7}$
2	90	3	44 $\frac{24}{92}$
3	00	3	33 $\frac{1}{3}$
3	10	3	22 $\frac{8}{31}$
3	20	3	12 $\frac{1}{2}$
3	30	3	3 $\frac{1}{33}$
3	40	2	94 $\frac{2}{7}$

	Ch.	Li.
Length	9	50
Breadth	6	25
	4750	
	1900	
	5700	
Acres	5	93750
	4	
Roods	3	93750
	40	
Poles	15	00000

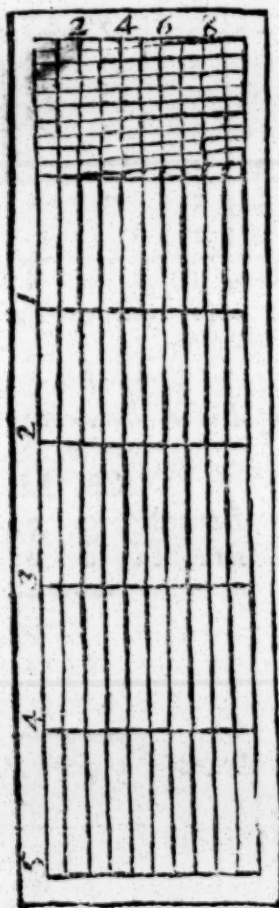
by 4, the Roods in an Acre, from which Product I also cut off 5 Figures or Places, and the Remainder is 3 Roods.

Lastly, I multiply 75000, so cut off, by 40, the Poles in a Rood, and cut off 5 Places as the other, and those to the Left-hand are 15 Poles.

To reduce Chains and Links into Feet.

Multiply the Number of Chains and Links together, as whole Numbers, by 66, the Feet in a Chain, which is 4 Poles in Length, and from the Product cut off the two last Figures towards the Right-hand, and the other Figures are Feet; and the two Figures so cut off to the Right-hand are the hundredth Parts of a Foot; but if the Number of Links, before you begin to multiply, be under 10, then add a Cypher to it on the Left-hand; as suppose it were 90 Chains, 5 Links, set it down thus: 90 05; observe the same in all Lengths.

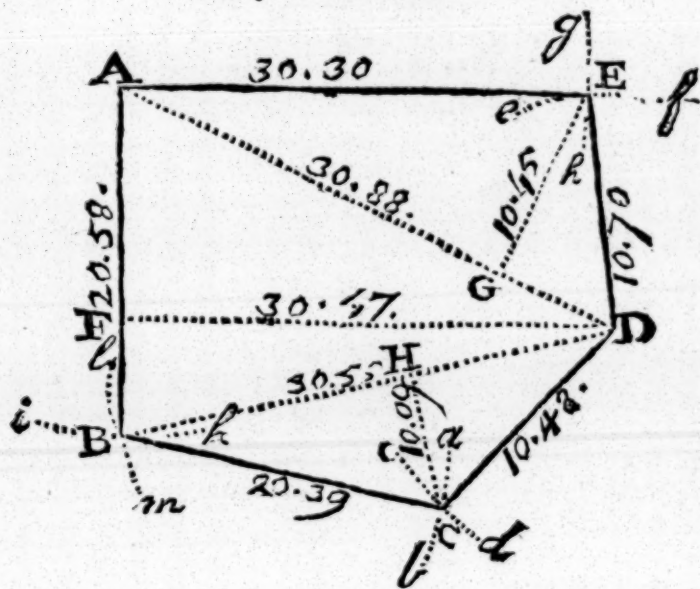
A Description of the Diagonal Scale, very useful in plotting, &c. Land.



THIS Scale consists of 11 parallel Lines, equi-distant from one another, so as to include 10 equal Spaces, which are cut by perpendicular Lines, dividing the Scale into equal Parts, numbered 1, 2, 3, 4, 5. One of these Divisions, *viz.* the last on the Right hand, is subdivided by diagonal Lines; so that if one of the large Divisions represents Chains, a Line may be measured to a single Link, one of the large Divisions being subdivided by the diagonal Lines into 100 equal Parts, the Number of Links in a Chain; and, consequently, any Number of Chains and Links may be set off by this Scale. A little Consideration of the Figure will sufficiently explain it's Nature, and render it's Use very easy and expeditious. If one of the large Divisions are reckoned 10 Chains, then every one of the smaller Divisions will be 100 Links, and consequently you can only measure within 10 Links of the Truth, every smaller Division, which signifies 100 Links, being sub-

divided by the diagonal Lines into 10 Parts only. But the Practitioner should always remember to make Use of as large a Scale as possible, especially if he would have his Work exact, and always to reckon one of the large Divisions one Chain only, as the Dimensions of any Field or Parcel of Land may then be plotted with the greatest Accuracy.

To measure a Close or Field by the Chain, plot it on Paper, and find it's Content.



Let *ABCDE* represent the Close or Field to be measured and plotted by the Chain only. In order to this I begin at the Corner *A*, and measuring in a straight Line to the Corner *D*, which I find 30 Chains, 88 Links, and note it down in my Paper. Then I measure along the Side of the Hedge from *D* to *E*, and find it 10 Chains 70 Links, which I also note down. From thence I measure along the Side of the Fence from *E* to *A*, and having found it 30 Chains 30 Links, I note it down; and proceed in my measuring from *A* to *B*, which I find 20 Chains 58 Links. From the Corner *B* I measure to the Corner *D*, and find it 30 Chains 55 Links. From *D* I measure to the Corner *C*, and find it 10 Chains 48 Links: And from *C* to *B* 20 Chains 39 Links. Thus have I taken all the requisite Dimensions. The next Operation is

To plot the above Field on Paper.

In order to this I draw a Line from *A*, representing my first Station, of a sufficient Length, and take from my diagonal Scale 30 Chains 88 Links, and placing one Foot of the Compasses in the Point *A*, set off the Distance to *D*, which will represent the Corner of the Field I measured to from *A*. Then I take from my Scale 10 Chains 70 Links, and setting one Foot of the Compasses in *D*, describe the small Arch *ef*. I also take from the same Scale 30 Chains 30 Links, and placing one Point of the Compasses in *A*, describe with the other the small Arch *gb*, cutting the former in *E*; and draw the Lines *ED* and *EA*. Then I take from my Scale 20 Chains 58 Links, and setting one Foot of the Compasses in *A*, and with the other describe the small Arch *ik*. I also take 30 Chains 55 Links from my Scale, and setting one Foot of the Compasses in *D*, with the other sweep the small Arch *lm*, cutting the former in *B*; and draw the Line *AB*, and the dotted Line *BD*. Lastly, I take 20. 39 from my Scale, and from *B* sweep the same Arch *ab*; and with 10. 48 sweep, from *D* the small Arch *cd*, cutting the former in *C*; and draw the Lines *BC* and *DC*. Thus is the Plot finished; and every Part of it may be measured by applying it to the same Scale. Nothing now remains but

To find the Content of the Field.

The Field is divided by the dotted Lines *AD* and *BD* into three Triangles, *ADE*, *ABD*, and *BDC*, and consequently, the Contents of these three Triangles when added together, will give the Content of the whole Field: But before these Contents can be found, the Lengths of the Perpendiculars *EG*, *DF*, and *CH* must be measured in the following Manner: Place one Foot of the Compasses in *E*, and extend the other till it will just touch the Line *AD*, but not cut it, and measure the Distance between the Points of the Compasses on the Scale, 10 Chains 45 Links. Do the same by the Perpendiculars *DF* and *CH*, and you will find the former 30. 47. and the latter 10. 9. Having thus found the Lengths of the three Perpendiculars, the Areas of the three Triangles will be easily found by the Rule laid down for finding the Content of a Triangle, in the Article of Measuring Superficies.

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For the Triangle ADE.

3088 Length of the Base.

522 Half the Perpend.

$$\begin{array}{r} \text{---} \\ 6176 \\ 6176 \\ 15440 \\ \text{---} \\ 16119 \overline{)36} \\ \text{---} \end{array}$$

For the Triangle ABD.

2058 Base.

1523 Half Perpend.

$$\begin{array}{r} \text{---} \\ 6174 \\ 4116 \\ 10290 \\ 2058 \\ \text{---} \\ 3134334 \\ \text{---} \end{array}$$

For the Triangle BCD.

3055 Base.

504 Half Perpend.

$$\begin{array}{r} \text{---} \\ 12220 \\ 152750 \\ \text{---} \\ 1539720 \\ \text{---} \end{array}$$

1611936	1st Triangle
3134334	2d Triangle
1539720	3d Triangle

Acres 62.85990

4

Roods 3.43960

40

Perches 13.38400

Thus the Area of the Field is 62 Acres, 3 Roods, and 13 Perches.

Q

Of GAUGING Vessels.

THE Art of Gauging is little different from the measuring of Timber; as a Foot of Timber is 1728 cubical Inches, therefore, as often as 1728 solid Inches are found in a Piece of Timber, be it round or square, so many Feet of Timber are contained in the Piece.

So also in the Art of Gauging; the Gallon of Ale and Beer is agreed on to be 282 cubical Inches, and the Wine Gallon 231, and the Gallon of dry Measure 272.

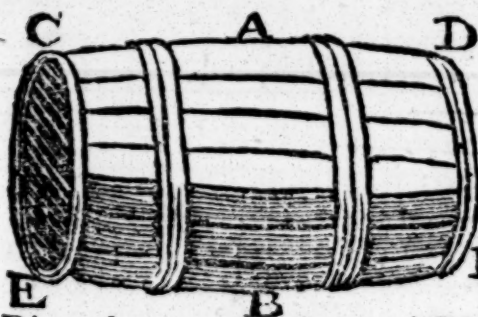
Therefore, so often as 282 solid Inches are contained in any Vessel, round or square, so many Gallons of Ale or Beer the said Vessel will hold. The same is to be observed in wine and dry Measure, &c.

Note, That every cubical Foot contains 6 Gallons, and a small Matter more than a Pint, of Ale or Beer.

Of Wine, 7 Gallons, and almost 2 Quarts.

A cubical Foot of dry Measure contains 6 Gallons, and about the third Part of a Gallon.

For 141 Inches are in 2 Quarts of Ale or Beer, $70\frac{1}{2}$ in a Quart, $35\frac{1}{4}$ Inches in a Pint.



In order to gauge, or find the Content of any Cask, you must measure the Length CD , EF , the Bung Diameter AB , and the Diameters at the Heads CE and DF . Square Vessels of the same Dimensions at the Top and Bottom are easily gauged, as will appear from the following

Example. Suppose there is a Vessel to be measured, in Length 105 Inches, in Breadth 76 Inches, Depth 46 Inches; how many square Inches are therein, as also how many Gallons or Barrels?

Multiply the Dimensions one into another, as is shewed in square Timber-Measure, and the last Product gives 367080 Inches in the Vessel; which divide by 282, or multiply by this Number 35461, as in this Example.

Cubic

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Cubic Inches in the Tun 367080
The fixed Number given 35461

367080
2202480
1408320
1835400
1101240

Gallons 1301|7023880

And from the Product always cut off 7 Figures or Places to the Left-hand (which are Parts of a Gallon) and those on the Right-hand are Gallons, as in this Example are 1301 Gallons.

Note, That the Parts of a Gallon are not considerable, if there happen to be a Cypher next the Gallons: But in that above is the Figure 7, which is the 7 tenth Parts of a Gallon; that is, if a Gallon was divided into 10 Parts, it is 7 Parts thereof; or if the Figure 5 had been in the Place of the 7, it had been half a Gallon, because 5 is the half of 10; or if the 70 next the Gallons had been 75, it had been three Quarters of a Gallon, because 75 is three Quarters of a Hundred, &c.

Lastly, Divide 1301 Gallons, so cut off, by 36, (the Gallons in a Barrel of Beer, or by 32, in a Barrel of Ale) and the Quotient gives 36 Barrels of Beer, and 5 Gallons remaining, and near three Quarters of a Gallon.

Example. How to gauge a round Tun, Tub, or Furnace.

First, If your Tun, or the like, be of one Bigness or Breadth, both at Top and at Bottom, find the Cubic Inches therein contained, as is shewn in round Timber-Measure, and reduce it into Gallons, as before.

But if it be narrower at the Top than at the Bottom, or contrary, take the Breadth or Diameter of the Tun, a little above the Middle of it, that is, next the widest End, if it be taper.

Or find the mean Diameter thus:

The Diameter at the Bung or Top of the Tun	} 26	The two Thirds of the Difference are 2 Inches, which added to 23, the lesser Diameter, makes 25, the mean Diameter.
The Diameter at the Head or Bottom of the Tun		
3 Inches Diameter	3	<i>Example.</i>

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Example. Suppose the mean Diameter of a Tun, Tub, Furnace, or half a swelling Cask to be 81 Inches, and the Length 48, how many Gallons are therein?

The Cubic Inches contained therein you may find by the Rule of round Timber Measure, as thus:

The mean Diameter is 81 }
Length of the Vessel is 48 } Inches.

Multiply 81 by 81, and that Product by 11, always, and the last Product divide by 14, always, the Quotient gives the Content at 1 Inch deep of the Liquor, if any.

2dly, Multiply the said Quotient by 48, the Length of the Vessel, and the Product gives the solid Inches in the same, which reduce into Gallons, and the Gallons into Barrels, gives 24 Barrels and about 13 Gallons and a Half.

Example. Suppose the mean Diameter of a Cask is 14 Inches, and the Length 72 Inches, how many Gallons are therein?

Extend the Compasses on Gunter's Line from 18, 95, to 14 the Diameter, that Extent twice downwards from 72, the Length, will reach to somewhat above 39 Gallons of Ale.

But if a Wine Vessel extend from 17, 15, always, to 14 the Diameter, that Extent twice downwards from 72, the Length in Inches, will reach to 18 Gallons.

1	17	26	2066	51	5127	76	8155
2	48	27	2178	52	5255	77	8263
3	87	28	2932	53	5382	78	8369
4	138	29	2307	54	5509	79	8473
5	187	30	2523	55	5636	80	8576
6	248	31	2640	56	5762	81	8677
7	308	32	2730	57	5888	82	8776
8	375	33	2878	58	6014	83	8873
9	446	34	2998	59	6140	84	8967
10	520	35	3113	60	6265	85	9059
11	598	36	3241	61	6389	86	9149
12	680	37	3364	62	6513	87	9236
13	764	38	3487	63	6636	88	9320
14	851	39	3611	64	6759	89	9402
15	941	40	3734	65	6881	90	9480
16	1033	41	3860	66	7002	91	9554
17	1127	42	3986	67	7122	92	9625
18	1224	43	4112	68	7241	93	9692
19	1323	44	4238	69	7360	94	9755
20	1424	45	4364	70	7457	95	9813
21	1527	46	4491	71	7593	96	9866
22	1631	47	4618	72	7708	97	9913
23	1737	48	4745	73	7822	98	9952
24	1845	49	4873	74	7934	99	9983
25	1955	50	5000	75	8045	100	10000

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Example. Suppose a Cask containing 60 Gallons, the Bung Diameter 28 Inches, and the Liquor drawn off 6 Inches; then the wet Inches of the Diameter must be 21 Inches: The Question is, How many Gallons remain in the Cask?

Divide 7, the dry Inches of the Bung Diameter, by 28, the whole Diameter, add two Cyphers.

Thus, 28) 700 (25 Quotient.

$$\begin{array}{r} 56 \\ \hline 140 \\ 140 \end{array}$$

Next, seek the Quotient 25 in the Table, and against it you will find 1955, which Number I multiply by the whole Content, 60 Gallons. Thus,

Against 25 the Number is 1955
60

Gallons 11|7300

From the Product I cut off 4 Figures, always, so that the empty Part of the Cask is 11 Gallons, and the Fraction 7300 makes near three Quarters of a Gallon, because 7300 wants about a Quarter of 10000.

Lastly, From the whole Quantity 60 Gallons, subtract 11 Gallons $\frac{3}{4}$, the Part empty, then the Liquor remaining in the Cask must be 48 Gallons and a Quarter of a Gallon, the Answer. Or thus:

Divide the wet Inches 21, by the whole Diameter 28, adding 2 Cyphers, as before.

Thus, 28) 2100 (75 Quotient.

$$\begin{array}{r} 196 \\ \hline 140 \\ 140 \end{array}$$

The Quotient 75 seek in the Table, and against it is the Number 8045, which multiply by 60.

Thus, 8045
60

Gallons 48|2700

The

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The Liquor 48 Gallons, the Answer; only the Fraction 2700 being about, or somewhat more than, a Quarter of a Gallon, because 2700 is about a Quarter of 10000.

Note, That if after Division there happen a Remainder or Fraction, and that be about Half the Divisor, I take the next biggest Number; or if it be less, then take Half the Divisor, or the same Number, which is the Quotient.

How many solid Inches are in an Ellipsis, or a Vessel like to an Egg?

Suppose the Breadth or shortest Diameter is 16 Inches, and the Length 36, the mean Diameter will be 24 Inches, find the solid Inches, as in measuring a Globe.

Note, That if any Tun, Copper, or other Vessel, be uneven at the Bottom, put as many Gallons of Water therein as will cover the same, and let the Top of the Water be accounted as the Bottom of the Vessel, and find the superficial Inches thereof; then try the Depth of the Copper in divers Places, add them together, and divide the Sum by the Number of Dipping-Places, and the Quotient gives the Depth of the right Dipping Place; which multiplied by the Superficies, or the Content of the Inches of the Superficial Water, this last Product gives the Content in Inches.

To gauge a round Bowl, or the Bottom of a Furnace.

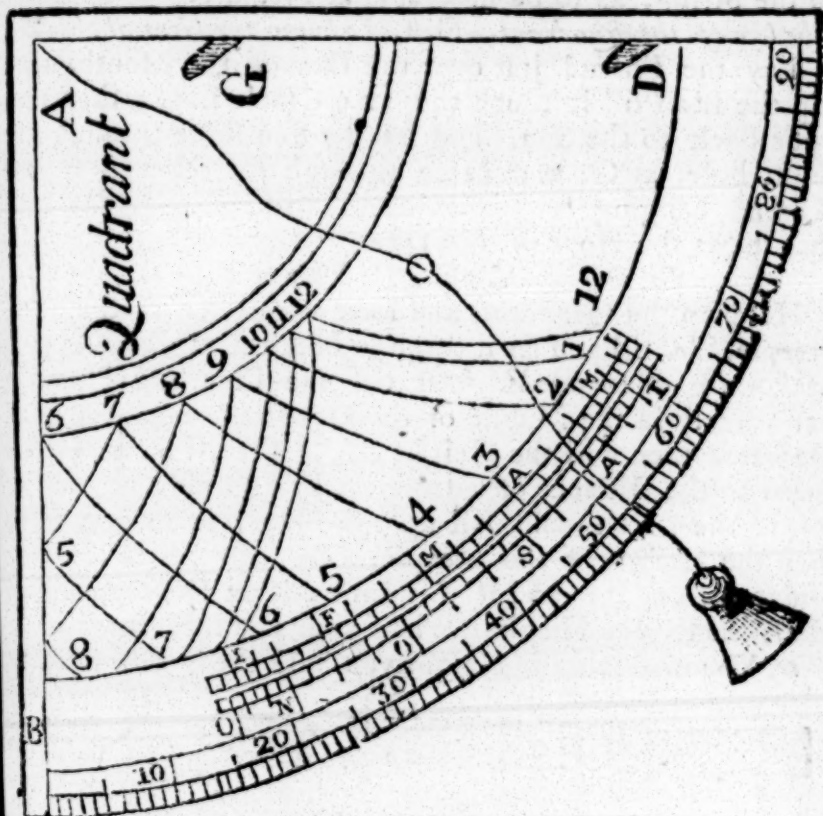
Suppose the Bowl is full of Water; first, Measure the Surface of the Water, as you measure a round Table, or multiply Half the Circumference by Half the Breadth or Diameter, and that Product gives the Content in square Inches; then measure the Depth of the Water in several Places, and add them together, and divide the Sum by the Number of Depths you took, and the Quotient gives the mean Breadth sufficiently exact for common Practice.

Lastly, Multiply the mean Breadth by the Inches on the Surface of the Water, and the Product gives the Content in square Inches; and the Way to reduce these Inches into Gallons, Pints, &c. is taught at the Beginning of Gauging.

N. B. The more Dipping-Places you take, the more exact your Work will be.

A Description

A Description of that most useful Instrument, commonly called
a QUADRANT.



FIRST, that outward Limb, or circular Part, is the fourth Part, or Quarter of the Perimeter of a Circle, contained between the two Semi-diameters, or straight Sides, and divided into ninety equal Parts or Degrees, figured 10, 20, 30, &c. to 90.

2dly, Above these Figures, 10, 20, 30, &c. are the capital Letters I A S O, &c. going from the Right-hand to the Left; and above these I F M, &c. going from the Left-hand to the Right, signifying the several Months of the Year, viz. the uppermost, *January, February, March,* &c. the lowermost, *July, August, September,* &c. each Month is divided into 6 Parts, each Part representing 5 Days, &c.

3dly, Above the Letters for the Months are Figures and Lines, expressing the Hours of the Day.

4thly, Upon the Side G D are, or should be, two thin Plates of Brass small Needles, &c. with a small Hole in each, called Sights, exactly of the same Height.

Lastly, In the Centre of the Circle, or Meeting of the Semi-diameters A B—G D, is drove a small Stud, &c.
P from

from whence a Thread, with a Lead at the End of it, is suspended, and a small Bead, Bit of Lead, &c. so fastened to the String, as to be moveable at Pleasure.

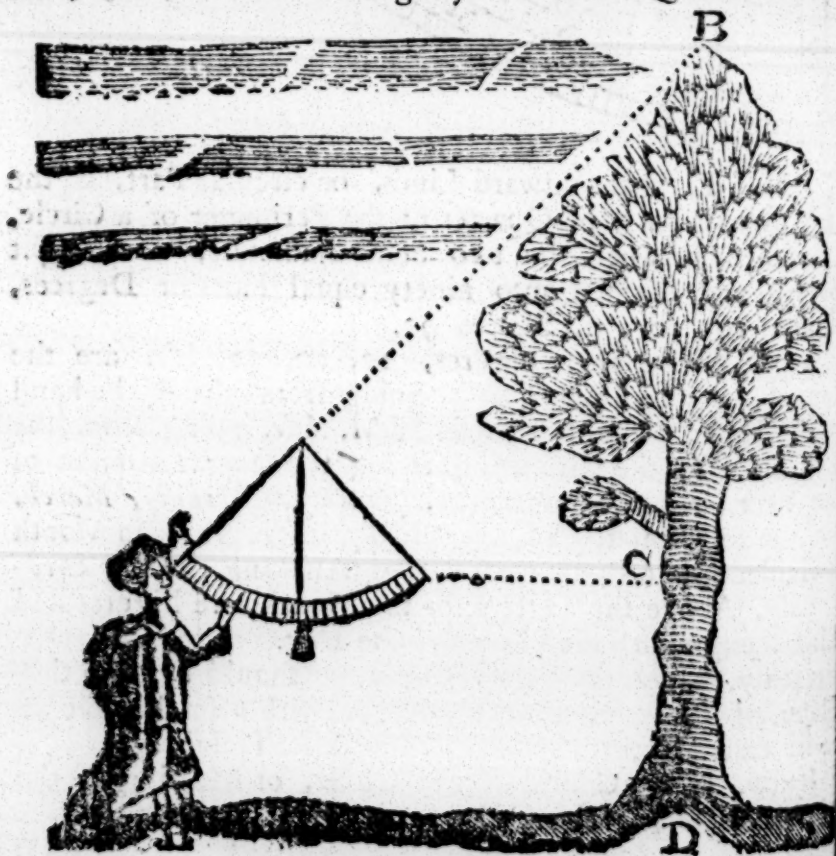
The Use of the Quadrant. First, *To know the Hour of the Day.*

Lay the Thread just over the Day of the Month, then slip the Bead till it touch the 12 o'Clock Line; then turn your Back to the Sun, and let the Sun shine through the Sight-hole, at G, and come through the other at D, the Thread hanging freely, the Bead will rest upon the Line that shews the Hour of the Day.

To find the Height of a Tree or Steeple.

Hold up the Quadrant, and look at the Top of the Tree, Steeple, &c. till you see it through both the Sights, stepping backwards or forwards, &c. till the Line and Plumbet hang freely in the Middle of the Quadrant, viz. upon 45 Degrees, then will the Height of the Tree, &c. be exactly equal to the Distance of it from the Place where you stand; but if the Line should fall upon 22 Degrees and an Half, then the Height of the Steeple, &c. will be twice your Distance from it; and if this Line cut 72 Degrees and an Half, then is the Height but half your Distance from it, &c.

Note, You must add the Height you hold the Quadrant to it.



Thus, for Instance, suppose you were desirous of measuring the Height of the Tree BD , chuse some convenient Station, as at E , and, holding up the Quadrant A , look through the Sights till you see the Top of the Tree at B ; then move forward or backward till the Plummets cut the 45th Degree, or the Middle of the Quadrant, when the Distance ED , measured on the Ground, will be equal to the Height of that Part of the Tree BC , to which if you add the Height CD , which is equal to AE , the Height of the Eye above the Ground, you will have BD , the Height of the Tree above the Ground.

By the Quadrant you may also easily know if Water may be conveyed to your Dwelling from a distant Spring, by Means of a Pipe, either of Lead or Elm, laid in the Ground.

In order to this, let a Pole be placed upright in the Pond or Spring, and mark how many Feet and Inches it is above the Surface of the Water; then set up another Pole of equal Height near the Place where you would have the Water conveyed to: This done, apply the Edge of the Quadrant AB to the Pole, letting the Centre A be just equal to the Top, and look through the Sights to the Top of the other Pole, the Plummets hanging at Liberty, and raise or depress the Quadrant till you see the Top of the Pole placed in the Water. If the Thread cuts any Degree of the Quadrant, it shews that the Water is higher than the Place where you stand, and consequently may be conveyed thither by Pipes; and the more Degrees are cut by the Thread the greater is the Declivity, and, consequently the Water will run the swifter through the Pipes. But if the Thread falls directly on a Line AB , it shews that the two Places are directly on a Level, and therefore that the Water will not flow through the Pipes.

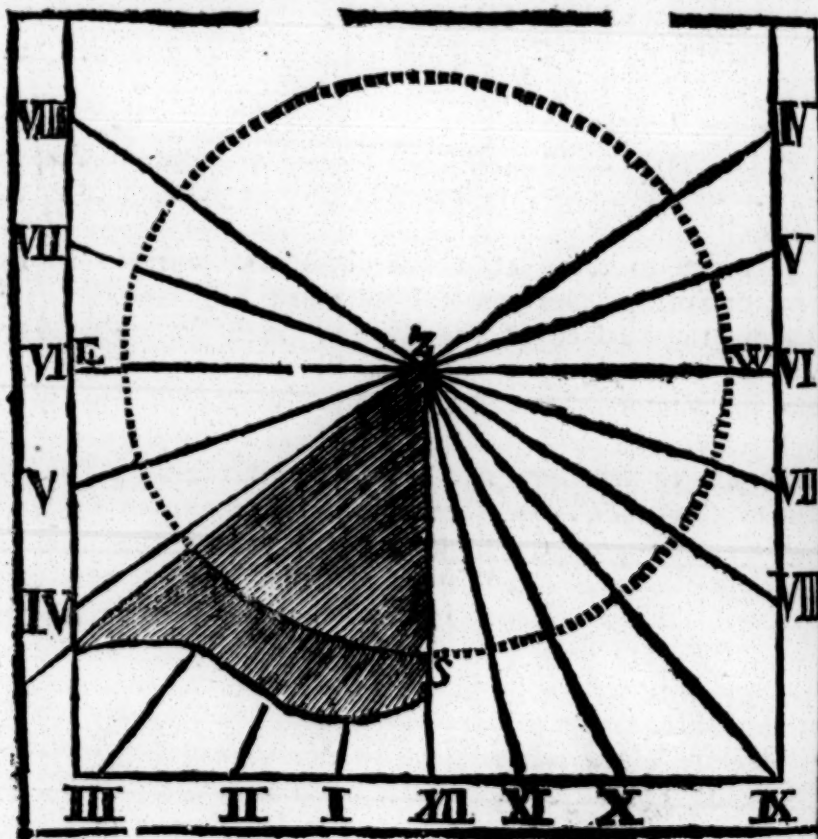
Of DIALLING.

THE Art of Dialling is of great Use, teaching the Method of constructing Instruments for measuring Time, by Means of the Shadow of a Gnomon or Style caused by the Sun.

There are a great Variety of Dials described by different Authors; but the most general are the Horizontal, the Vertical, and the East or West Dial.

The Manner of drawing an Horizontal Dial.

An Horizontal Dial is that which is fixed on a Post or Pedestal, with the Dial-plane, or that on which the Hour-lines are drawn, parallel to the Horizon. The following Figure represents an Horizontal Dial, and may be made in the following Manner:



First, With a Ruler and the Point of the Compasses &c. draw a Line on Paper, at any Length, as the Line *EW* in this Dial, then cross it at right Angles with another Line, as the Line *ZS*, which Line *ZS* is the 12 o'Clock Line, and the Line *EW* the 6 o'Clock Line.

Next, open the Compasses, and set one Foot at the Beginning of the Degrees, or Arch of the Quadrant, before described, and extend the other Foot to 60 Degrees; with that Extent set one Foot in the Centre of the Dial at that is, just where the first Lines cross each other, and draw the Circle *EW SZ*.

Tak

Taking the Line *ZS* for the 12 o'Clock Line, the next Thing is to know what Distance must be set off from it, for 1 o'Clock and 11 o'Clock, because the Hours in the Morning and Afternoon, that are equally distant from Noon, or 12 o'Clock, are the same, viz. 11 1; 10 2; 9 3, &c.

I look in the little Table in the Margin, and in the second Column I find, against 1 Hour and 11, 11 Degrees 55 Minutes, which I take off the Edge of the Quadrant thus: I set one Foot of the Compasses (as before) at the Beginning of the Divisions, under *B*, and open the other Foot to almost 12 Degrees at *C*; the Compass so opened, I set one Foot in the Circle at *S*, or the 12 o'Clock Line, and with the other

52 Degrees.			
D. M.		Hours.	
11	55	1	11
24	26	2	10
38	13	3	9
53	41	4	8
71	9	5	7

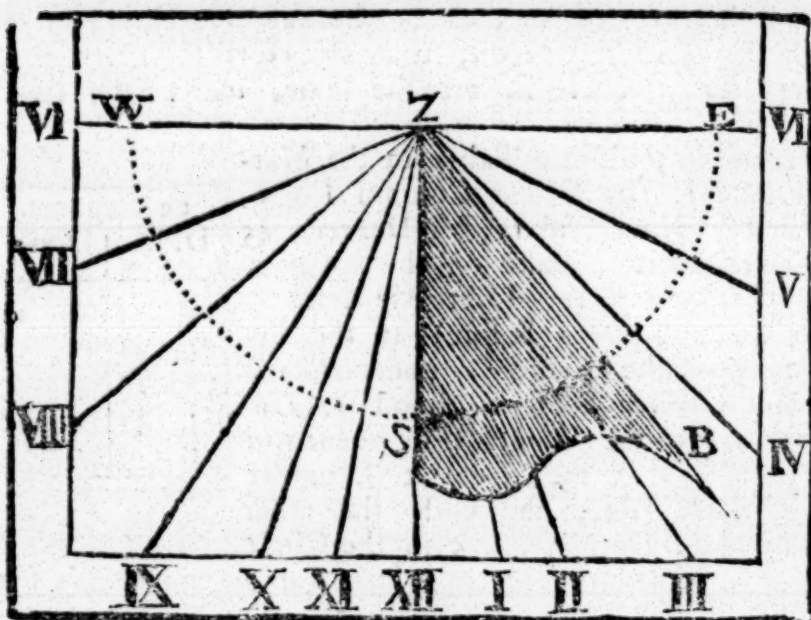
Foot make a Dot or Mark in the Circle, both towards *E* and *W*, and from those two Marks I draw Lines from the Centre *Z*, through these Marks to the Margin of the Dial.

Next to mark the Hour for 2 and 10 o'Clock, look in the Table for 2 and 10 Hours, and you will find 20 Degrees, 26 Minutes, which set off the Degrees of the Quadrant from the 12 o'Clock Line both Ways in the Circle, as you did from the 11 and 1 o'Clock, and draw Lines from the Centre *Z*, through these Marks as before.

Observe the same for 3 and 9 o'Clock; and 4 and 8 o'Clock; and 5 and 7 o'Clock; and for the Hours of 5 and 7, and 4 and 8, above the 6 o'Clock Line, set off the Distance below.

Lastly, For the Height of the Style, which must be always equal to the Latitude of the Place where your Dial is to be used; suppose 52 Degrees; take it off the Edge of the Quadrant, as above, with the Compasses, and with that Extent set one Foot at *S* on the 12 o'Clock Line, as you did before, and extend the other Foot in the Circle, and make a Mark, and draw a Line from thence to *Z* the Centre; for the Edge, as you may see in the Dial, is shaded with short Lines, but the Style is to stand upright in the 12 o'Clock Line, and it will cast a Shadow upon the true Hour of the Day.

To make a South erect Dial.

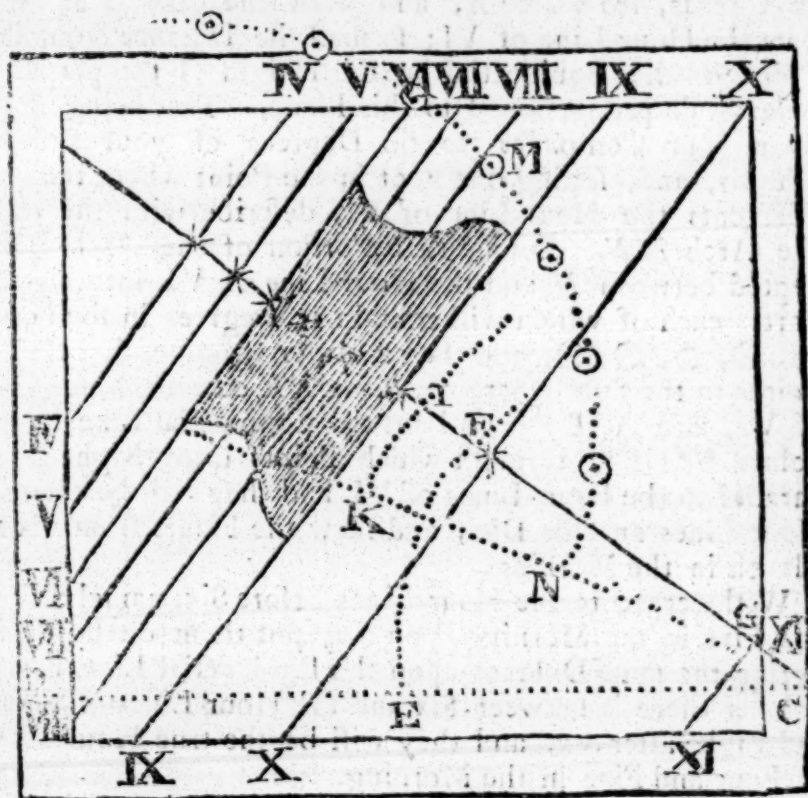


THE making of this Dial differs very little from the former, as you may see by this Figure, only the Style of this Dial is to be the Height of the other Part of the Quadrant, namely, 38 Degrees, the other being 52. Thus *ZBS* is the Style of the Dial.

Note, That the Dial above serves for a Wall facing the South; but if you turn the same Dial upside down, it will serve for the north Side of the Wall, if the Line marked 7 be marked 5, and the Line 8 with 4, and the Line 5 with 7, and the Line 4 with 8, all other Hour Lines in this North Dial are useless; because the Sun in *England* shines on a North Wall, the longest Day, only before 6 in the Morning, and after 6 at Night.

Or you may make a South Dial by this little Table, as is directed in the Horizontal Dial.

52 Degrees.			
D. M.		Hours.	
9	22	1	11
19	33	2	10
31	36	3	9
46	48	4	8
68	26	5	7



ON the Point C, at the lowest Corner of the Dial, with 60 Degrees of your Line of Chords, describe the Arch *EF*: Then from the same Line of Chords take 38 Degrees, the Complement of the Latitude of the Place, or what the Latitude of the Place wants of 90 Degrees, and set that Distance on the Arch from *E* to *F*, and draw the Line *CF* quite through the Plané; which Line will represent the Equinoctial Circle.

In order the better to proportion your Style to your Plane, and that all the Hours may come on, and be at a convenient Distance from one another, assume two Points in the Equinoctial Line, one towards the End *C* for the Hour *XI*, as the Point *G*; and another towards the other End thereof for the Hour of *VI*; and through these two Points draw two Lines at Right-Angles to the Equinoctial Line, for the Hours of *XI*. and *VI*.

Upon the Point *G*, with 60 Degrees of the Line of Chords, describe the Arch of the Circle *IK*, below the Equinoctial,

Equinoctial, and set thereon 15 Degrees from your Line of Chords, from *I* to *K*, and draw the Line *GK* till it cuts the Hour-Line of *VI*; so shall the Distance from that Point of the Equinoctial be the Height of the perpendicular Style proportioned to this Plane. This being done, open your Compasses to 60 Degrees of your Line of Chords, and, setting one Foot in the Point where the Line *NK* cuts the Hour-Line of *VI*, describe with the other the Arch *MN*. Divide that Portion of the Arch intercepted between *N* and the Hour-Line of *VI*. into 5 equal Parts, each of which will contain 15 Degrees in the Points $\odot$, $\odot$, $\odot$, $\odot$, $\odot$, and lay a Ruler from each of these Points to the Spot where the Line *NK* cuts the Hour-Line of *VI*, and the Ruler will cut the Equinoctial Line in the Points * * * * *, through which Points draw Right-Lines parallel to the Hour-Lines of *VI*, and they will be the true Hour-Lines on this Dial, and shew the Hours from Six to Eleven in the Morning.

With regard to the Hour-Lines before Six, namely, Four and Five in the Morning, you may put them on by transferring the same Distance upon the Equinoctial Line before Six, as there is between Six and the Hour-Lines of Seven and Eight after Six, and they will be the true Hour-Lines of Four and Five in the Morning.

With regard to the Style, it must be either a straight Pin or Wire-pointed, exactly of the Length of the Distance between the Intersection of the Line *NK*, with the Hour of Six and the Equinoctial, or some Piece of the same Length erected perpendicular on the Hour-Line of Six, which will shew the Hour by the Shadow of it's upper Edge.

Note, Whereas this Dial serves only to face the East, if you desire to make a West Dial, it is but taking your East Dial already drawn upon Paper, and lay the Face thereof to a Glass-Window, and draw the same Lines on the Back of the Paper Dial; so you will have an East Dial on one Side, and a West Dial on the other; having first set Figures against the Hour-Lines, that is, instead of 11, 10, 9, 8, 7, 6, 5, 4, in the East Dial, you must set down against the same Lines on the West Dial, 1, 2, 3, 4, 5, 6, 7, 8, &c. *Also note*, That you are to place no Lines on these Dials, besides the Hour-Lines; and if you have a Glass-Window facing either to the East or West, you may paste the Face of

of one of them to the Glass, fixing a Wire through the Lead of the Style.

A succinct Account of the SOLAR SYSTEM, and of the heavenly Bodies that compose it.

THE Planets and Comets that continually move round the Sun as their Centre, constitute what we term the Solar System: In this grand Assemblage of heavenly Bodies, one regular Law is observed, namely, That those which are nearest the Sun move faster, and also finish their Revolution sooner than those which are remote, and in the most exact Proportion with regard to their respective Distances. Their Motions are all performed from West to East, in Orbits nearly circular. Their Names, Distances, Magnitudes, and periodical Distances are as follow:

Of the S·U·N.

The Sun, an immense Globe of Fire, is placed near the Common Centre, or rather in the lower Focus of all the Orbits of the Planets and Comets, and turns round his Axis in 25 Days 6 Hours; his Diameter is computed to be 763000 Miles; and the various Attractions of the circumvolving Planets cause him to make a small Revolution round the Centre of Gravity of the System. A Spectator, placed in the Sun, would see all the Planets moving regularly round him the same Way; but an Observer on the Earth, or any of the other Planets, would see the rest appear sometimes to move forward, sometimes backward, and sometimes to stand still. The Comets come from all Parts of the Heavens, and move in every Direction.

It may not be improper here to observe, that neither the Sun, nor any of the Planets have any material Axis to support them, as they are represented in Orreries, and other Machines of that Kind. The Axis of a Planet is only an imaginary Line conceived to pass through it's Centre, and about which it revolves, as on a real Axis. The Extremities of this Line are called it's Poles; and that pointing towards the northern Part of the Heavens it's North Pole, and the other pointing towards the southern Part, it's South Pole. A Ball thrown into the Air with a

whirling Motion, turns within itself while it moves forward, and is said to turn on it's own Axis; and such are the Lines we mean when we speak of the heavenly Bodies.

By the Orbits of the Planets, we mean their Tracts through the open and unresisting Space in which they move, and are kept in by the attracting Power of the Sun, and the projectile Force originally impressed on them by the Hand of their great Creator.

Of M E R C U R Y.

Mercury, the nearest Planet to the Sun, moves round him in 87 Days 23 Hours, nearly; which is the Length of his Year; but the Astronomers have not yet been able to determine the Length of his Days and Nights. His Distance from the Sun is computed at about 32 Millions of Miles, and his Diameter 2600. In his Course round the Sun, he moves at the Rate of 95000 Miles every Hour. His Light and Heat from the Sun are almost seven Times as large as ours: But this prodigious Heat is no Argument against the Planet's being inhabited; because the Almighty could as easily suit the Bodies and Constitutions of it's Inhabitants to the Heat of their Dwellings, as he has done ours to the Temperature of our Earth; and it is very probable that the People there have the same Opinion of us, as we have of the Inhabitants of *Jupiter* or *Saturn*, namely, that we must be intolerably cold, and have very little Light at so great a Distance from the Sun.

Of V E N U S.

Venus, the next Planet in Order, is computed to be 59 Millions of Miles from the Sun; and, by moving every Hour in her Orbit 69 thousand Miles, finishes her Revolution round the Sun in 224 Days 17 Hours, nearly, which is her Year, in which she has only 9 Days and a Quarter; so that every Day and Night is as long as 24 and one third Days and Nights with us. This odd Quarter of a Day, in every Year, makes every fourth Year a Leap Year in *Venus* as in our *Earth*. Her Diameter is 7906 Miles. Her Orbit includes that of *Mercury*, and is included by that of the *Earth*. When she appears to the West of the Sun, she rises before him, and is called the *Morning-Star*; but when she appears to the East of the Sun, she sets after him, and is then called the *Evening-Star*.

Of

Of EARTH.

The *Earth* is the next planet to *Venus* in the System. It is 81 Millions of Miles from the Sun, and moves round him in 365 Days, 5 Hours, 49 Minutes. It travels at the Rate of 58 thousand Miles every Hour, which Motion, though 120 Times swifter than a Cannon-Ball, is but little more than half the Swiftneſs of *Mercury's* Motion in his Orbit. The *Earth's* Diameter is 7970 Miles; and, by turning round it's Axis in 24 Hours from West to East, cauſes an apparent diurnal Motion of all the heavenly Bodies from Eaſt to Weſt. By this rapid Motion of the *Earth* on it's Axis, the Inhabitants about the Equator are carried 1042 Miles every Hour, while thoſe who live in the Latitude of *London* are carried only about 580, beſides the 58 Thousand Miles by the annual Motion above-mentioned, which is common to all Places whatſoever.

The *Earth's* Axis makes an Angle of 23 Degrees and a half with the Axis of it's Orbit; and keeps always the ſame oblique Direction, inclining towards the ſame fixed Stars throughout it's annual Courſe; which cauſes the Returns of Spring, Summer, Autumn, and Winter; for if the *Earth's* Axis had been perpendicular to the Axis of it's Orb, the Days and Night would have been equal throughout the Year, the Weather the ſame, with regard to Heat and Cold; and, conſequently, that beautiful Variety of the Seasons we now enjoy would have been unknown.

The *Earth* is round like a Globe, as appears from ſeveral Particulars; 1^{ſt}, from it's Shadow in Eclipses of the Moon, the Shadow being always bounded by a circular Line. 2^{dly}, From our ſeeing the Maſt of a Ship at a great Diſtance at Sea, while the Hull is hid by the Convexity of the Water. And, 3^{dly}, from it's having been ſailed round by ſeveral Navigators. With regard to the Hills and Mountains that diversify the Surface of the Globe, and render it's appearance irregular, they are ſo ſmall, when compared to the whole Bulk of the *Earth*, that they take off no more from it's Roundneſs, than a few Grains of Sand do from the Roundneſs of a common Globe.

The Seas, and unknown Parts of the Earth, by meaſuring thoſe Parts on the beſt Globes, contain 160 Millions, 522 Thouſand, and 26 ſquare Miles; the inhabited Parts 38 Millions, 990 Thouſand, 569: *Europe* 4 Millions, 456 Thouſand, and 65; *Aſia* 10 Millions, 768 Thouſand,

823; *Africa* 9 Millions, 654 Thousand, 807; *America* 14 Millions, 110 Thousand, 874: In all, 199 Millions, 512 Thousand, 595; which is the Number of square Miles on the whole Surface of our Globe.

The Earth is surrounded by a thin, fluid Mass of Matter called the Air, or Atmosphere, which gravitates to the Earth, revolves with it in it's diurnal Motion, and goes round the Sun with it every Year. This Fluid is of an elastic or springy Nature, and it's lowermost Parts, being pressed by the Weight of all the Air above them, are squeezed the closer together, and are therefore the densest of all the Earth's Surface, and increase in Rarity the higher we ascend; and this is the true Reason why Persons breathe with Difficulty on the Tops of very high Mountains, and often spit Blood. "It is well known, says the famous Sir *Izaak Newton*, that the Air, near the Surface of the Earth, possesses a Space about 1200 Times greater than Water of the same Weight:" And therefore a cylindric Column of Air 12000 Feet high, is equal in Weight to a Cylinder of Water of the same Breadth, and 1 Foot high. But a Cylinder of Air reaching to the Top of the Atmosphere is of equal Weight with a Cylinder of Water 33 Feet high; and therefore, if from the whole Cylinder of Air the lower Part of 1200 Feet high is taken away, the remaining upper Part to be of equal Weight with a Cylinder of Water 32 Feet high; wherefore, at the Height of 1200 Feet, or two Furlongs, the Weight of the incumbent Air is less, and, consequently, the Rarity of the compressed Air is greater, than that near the Earth's Surface, in the Ratio of 33 to 32.

The Weight of the Air at the Earth's Surface is found by Experiments made with the Air-pump, and also by the Quantity of Mercury that the Atmosphere balances in the Barometer; in which, at a Mean, the Mercury stands at 29 Inches and a Half high. And if the Tube was a square Inch wide, it would at that Height contain 29 cubic Inches and a Half of Mercury, which is just 15 Pounds Weight; and so much Weight of Air every square Inch of the Earth's Surface sustains; and every square Foot 144 Times as much. Now, as the Earth's Surface contains about 199,409,400 square Miles, it must contain no less than 5,559,215,016,960,000 square Feet; which multiplied by 2016, the Number of Pounds on every Foot

amounts

amounts to 11,207,377,474,191,360,000, for the Weight of the whole Atmosphere. And, consequently, a middle-sized Man, whose Surface is about 14 square Feet, is pressed by 28,224 Pounds all round; for Fluids press equally in every Direction up, down, and on all Sides. But because this enormous Weight is equal on all Sides, and counterbalanced by the internal Air in our Blood-Vessels, it is not felt.

The State of the Air is often such that we find ourselves languid and dull; which is commonly thought to be occasioned by the Air's being heavy and foggy about us: But this a Mistake, the Air is then too light, as is evident from the sinking of the Mercury in the Barometer, at which Time it is generally found that the Air has not sufficient Strength to bear up the Vapours which compose the Clouds: for when it is otherwise, the Clouds mount high, the Air is more elastic and weighty about us, by which Means it balances the internal Spring of Air within us, braces up our Blood-Vessels and Nerves, and makes us brisk and lively.

Besides other innumerable Conveniences which we receive from the Atmosphere, we have this great Advantage, that while the Sun shines it makes the Face of the Heavens or Firmament to appear lucid and bright; for if no Atmosphere surrounded and involved the Earth, only that Part of the Heavens would appear to shine in which the Sun was placed: And a Spectator, if he should turn his Back to the Sun, would immediately perceive it as dark as Night; and, even in the Day-Time, while the Sun shone, the least Stars would be visible, as they are now in the clearest Night; because, in that Case, there would be no Substance to reflect the Rays of the Sun to our Eyes, and all the Rays which do not fall upon the Surface of our Earth, passing by us, would either illuminate the Planets or Stars, or, spreading themselves out into infinite Space, would never be reflected back to us.

But since there is an Atmosphere covering the Earth, which is strongly illuminated by the Sun, it reflects the Light back upon us, and makes the whole Heavens shine so strongly, that it's Splendor obscures the faint Light of the Stars, and renders them invisible.

If there was no Atmosphere, the Sun immediately before his Setting would shine as briskly as at Noon; but, the Moment after he is set, the Face of the Earth would
be

be involved in as great Darkness as at Midnight. So quick a Transition from the greatest Light to the greatest Darkness would be very inconvenient to the Inhabitants of the Earth. But by Means of the Atmosphere it happens, that, though after Sun-Setting we receive no direct Light from the Sun, yet we enjoy it's reflected Light for some Time; so that the Darkness of the Night comes on gradually and by Degrees. For, after the Earth by revolving on it's Axis has withdrawn us from the Sight of the Sun, the Atmosphere, which is higher than us, will still be illuminated by the Sun; so that for a while the whole Heavens will have some of his Light. But the Sun descends gradually lower under the Horizon, the less the Air is inlightened by him: So that, when he has reached 18 Degrees below the Horizon, he no longer inlightens our Atmosphere, and then all the Part thereof that is over us becomes dark.

So likewise in the Morning, as soon as the Sun comes within 18 Degrees of the Horizon, he begins again to inlighten the Atmosphere, and to diffuse his Light through the Heavens: So that it's Brightness does not increase till the Sun rises and makes full Day. This small illumination of the Atmosphere, and State of the Heavens between Day and Night, is called the Twilight, which is observed in the Morning before Sun-rising, and at Night after it's Setting. It is called, in *Latin*, *Crepusculum*, which Term is adopted by several of our own Writers on Astronomy.

Of the M O O N.

The Moon is not a Planet, but a Satellite, or Attendant on the Earth, moving round it from Change to Full in 29 Days, 12 Hours, 44 Minutes; and going round the Sun with it every Year. The Moon's Diameter is 2180 Miles, and her Distance from the Earth 240,000. She goes round her Orbit in 27 Days, 7 Hours, 43 Minutes, moving about 2290 Miles every Hour; and turns round her Axis exactly in the same Time that she goes round the Earth, which is the Reason of her keeping always the same Side towards us, and that her Day and Night, taken together, is equal to our Lunar Month.

The Moon is an opaque Globe like our Earth, and shines only by reflecting the Light of the Sun; therefore, while that Half of her which is towards the Sun is inlightened, the other Half must be dark and invisible.

Hence

Hence she disappears when she comes between us and the Sun, because her dark Side is then towards us. When she is gone a little Way forward, we see a little of her inlightened Side; which still increases to our View as she advances forward, till she is opposite to the Sun; and then her whole inlightened Side is towards the Earth, and she appears with a round illuminated Orb, which we call the Full Moon; her dark Side being then turned away from the Earth. From the Full she seems to decrease gradually as she goes through the other Half of her Course, shewing us less and less of her inlightened Side every Day, till her next Change or Conjunction with the Sun, when she again disappears as before. Her being continually changing her Phases or Forms abundantly demonstrates that she has no Light of her own; for if she had, we should always see her with a round full Face like the Sun, as she is of a globular Figure.

The Moon has scarce any Difference of Seasons, her Axis being almost perpendicular to the Ecliptic. But what is very singular is, that one Half of her has no Darkeness at all, the Earth constantly affording it a strong Light in the Absence of the Sun, while the other Half has a Fortnight's Darkeness and a Fortnight's Light by Turns.

Our Earth is to her a Moon, waxing and waning regularly, but appearing thirteen Times as big, and affording her thirteen Times the Light as she does to us. When she changes to us, the Earth appears at Full to her; and when she is in the first Quarter, the Earth appears to be in the third, &c.

But from one Half of the Moon the Earth is never seen; from the Middle of the other Half it is always seen over Head, turning round almost thirty Times as quick as the Moon does. From the Line which limits our View of the Moon, or all round what we call her Edges, only one Half of the Earth's Side next to her is seen, the other Half being hid below the Horizon. To her the Earth appears to be the largest Body in the Universe, for it appears thirteen Times as big as she does to us.

If the Surface of the Moon were smooth and polished, like a Looking-glass, it would not then reflect Light on all Sides; but it would shew us only in some Positions the Image of the Sun, no bigger than a Point, though of immense Lustre. But, as in all our earthly Bodies, so in the
Moo

Moon, its Surface is very rough and uneven; upon which Account it diffuses the Light, by reflecting it on all Sides, without reflecting any Image of the Sun, as polished Glasses do.

But the Surface of the Moon is not only rough and uneven, but there are upon it prodigious high Mountains, and deep Vallies, which cover the whole Face of the Moon. For if there were no Parts in the Moon higher than the rest, no prominent Points, then a right-line in the Quadratures, and an elliptic Line in all other Phases, would terminate the light and dark Parts: But when the Moon is viewed with a Telescope, we find that there is no regular Line, the Confines of those Lines appearing toothed or notched, and cut with innumerable Breaks; and even in the dark Part, near the Borders of the lucid Surface, there are seen some small Places inlightened by the Sun's Beams; and, upon the fourth Day after the new Moon, there may be perceived some shining Points, like Rocks or small Islands, within the dark Body of the Moon; but not far from the Confines of Light and Darknefs, there are observed other little Spaces, which join the inlightened Surface, and extend themselves into the dark Side, changing their Figure by Degrees till they come at last wholly within the illuminated Face, and have no dark Spots around them. We afterwards observe many more shining Spaces to appear by Degrees within the dark Side of the Moon, which were invisible before the Line that terminates the light and dark Parts of the Moon was moved near them, were invisible, being without any Light, but wholly immersed in the Shadow. The contrary is observed when the Moon is decreasing, when the lucid Spots, which joined the illuminated Surface, recede from it by Degrees; and after they are intirely separated from the Confines of Light and Darknefs, remain, for some Time, visible, but at last disappear: Now this is impossible, unless these shining Points were higher than the rest of the Surface, so that the Sun's Rays may reach them.

These shining Points, situated on the Moon's Surface without the Confines of the illuminated Part, are the Tops of very high Mountains, which, rising far above the other Parts of the Surface, are sooner reached by the Sun's Beams and remain longer in the Light than the rest of the Part which have a lower Situation. Besides these, we also observe even in the illuminated Face of the Moon, many dark and
obscure

obscure Spots, which seem to be only Caverns or large Cavities, on which the Sun shining very obliquely, and touching only their upper Edge with his Beams, the deeper Places remain without Light: But, as the Sun rises higher upon them, they receive more of his Rays, and the Shadow, or dark Parts, grow smaller and shorter, till the Sun comes at last to shine directly upon them, and then the whole Cavity will be illuminated, and the Parts, which were before obscure, will appear as bright as the Tops of the Mountains. From these constant Observations it is plain, that the Moon's Face is in some Places covered with Mountains, and in others cut into deep Pits and Caverns.

Whoever accurately views the Face of the Moon with a Telescope, will discover in it an admirable Variety of Spots, many of which have a very remarkably bright Lustre, so that some Philosophers have imagined they were Rocks of Diamonds, while others have compared them to Pearls and precious Stones: But they seem to be the solid Parts of high Mountains, which are indued with a Quality of strongly reflecting Light. On the other Hand, there are many large Places and Parts which look dark, and of dusky Colour, which former Philosophers fancied to be Seas, Lakes, and Fens; but later Observations have discovered this to be a Mistake, and that they are not formed of any liquid Substance; for, when they are viewed through a good Telescope, we are convinced that they consist of an Infinity of Caverns and empty Pits, whose Shadows fall within them; which can never happen in a Sea or liquid Body. These dusky Spots, therefore, cannot possibly be Seas. On the contrary, they consist of some dark and sad-coloured Matter, which does not reflect the Light so strongly as the Tops of the Mountains. But even within these dark Spots we observe some Bodies of a brighter Light, which renders them more lucid than the rest.

Nor has the Moon any Clouds or Vapours from whence Rain may be generated: For if there were any, they must sometimes cover the Face of the Moon, and hide some of its Regions from our Sight: But this is never the Case, there is no dark Weather, but a constant Serenity in the Moon; and when there are no Clouds in our Air, the Moon always appears with the same Lustre.

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And as she is without Clouds and Vapours, so is she also without an Atmosphere, or Body of Air surrounding her, as we have. For, was this the Case, we should never see her Edge so well defined as it always appears; but there would be a Kind of Mist or Haze round her, which would cause the Stars to look fainter when they were near her Disk. But Observations prove, that Stars, which disappear behind the Moon, retain their full Lustre till they seem to touch her very Edge, and then vanish in a Moment.

Of M A R S.

The Planet *Mars* is next in Order, being the first above the Earth's Orbit. His Distance from the Sun is computed to be 123 Millions of Miles; and, by travelling at the Rate of 47 Thousand Miles every Hour, he goes round the Sun in 678 Days, 17 Hours; which is the Length of his Year, and contains $667\frac{3}{4}$ of his Days, every Day being 40 Minutes longer than ours. His Diameter is 4444 Miles; his Quantity of Light and Heat but one Half of ours; and the Sun appears but Half as big to him as to us.

This Planet, which is only a fifth Part as big as our Earth, is of a fiery red Colour, and, by his Appulses to some of the fixed Stars, seems to be surrounded by a very gross Atmosphere. He appears sometimes gibbous, but never horned; which shews, that his Orbit includes that of the Earth within it, and also that he does not shine by his own Light.

To *Mars* our Earth and Moon appear like two Moons, a Greater and a Lesser, changing Places with one another, and appearing sometimes horned, sometimes Half or three Quarters illuminated, but never full; nor, at most, above a Quarter of a Degree from each other, though they are really 240 Thousand Miles asunder.

Of J U P I T E R.

Jupiter, the biggest of all the Planets, is still higher in the System, being about 224 Millions of Miles from the Sun; and moving at the Rate of 25 Thousand Miles every Hour in his Orbit, finishes his annual Period in eleven of our Years, 314 Days, and 18 Hours. He is above a Thousand Times bigger than the Earth, his Diameter being

8 Thousand

Thousand Miles, which is more than ten Times the Diameter of the Earth.

Jupiter revolves round his Axis in 9 Hours, 56 Minutes, so that his Year contains 10,464 Days; and the diurnal Velocity of his equatorial Parts is greater than the Swiftneſs with which he moves in his annual Orbit.

Jupiter is ſurrounded by faint Subſtances called Belts, in which ſo many Changes appear, that they are generally thought to be Clouds; for ſome of them have been firſt interrupted and broken, and then have vaniſhed intirely. They have ſometimes been obſerved of different Breadths, and afterwards have all become nearly of the ſame Breadth. Large Spots have been ſeen in theſe Belts; and when a Belt vaniſhes, the contiguous Spots diſappear with it. The broken Ends of ſome Belts have been generally obſerved to revolve in the ſame Time with the Spots; only thoſe nearer the Equator in ſomewhat leſs Time than thoſe near the Poles; perhaps on Account of the Sun's greater Heat near the Equator, which is parallel to the Belts and Courſes of the Spots. Several large Spots, which appear round at one Time, grow oblong by Degrees, and then divide into two or three round Spots.

The Axis of *Jupiter* is ſo nearly perpendicular to his Orbit, that he has no ſenſible Change of Seasons; which is a great Advantage, and wiſely ordered by the great Author of Nature. For, if the Axis of this Planet were inclined any Number of Degrees, juſt ſo many Degrees round each Pole would, in their Turn, be almoſt ſix of our Years together in Darkneſs.

The Sun appears but one twenty-eighth Part as big to *Jupiter* as to us; and his Light and Heat are in the ſame ſmall Proportion, but compensated by the quick Returns thereof, and by four Moons, ſome bigger and ſome leſs than our Earth, which revolve about him: So that there is ſcarce any Part of this huge Planet but what is, during the whole Night, inlightened by one or more of theſe Moons, except his Poles, whence only the fartheſt Moons can be ſeen, and where their Light is not wanted, becauſe the Sun conſtantly circulates in or near the Horizon, and is very probably kept in View of both Poles by the Refraction of *Jupiter's* Atmosphere, which, if it be like ours, has certainly refractive Power enough for that Purpoſe.

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The three nearest of these Moons fall into his Shadow, and are eclipsed in every Revolution : But the Orbit of the Fourth is so much inclined, that it passes by *Jupiter* without falling into his Shadow, two Years in every Six. By these Eclipses, Astronomers have not only discovered that the Sun's Light comes to us in eight Minutes, but have also determined the Longitudes of Places on this Earth with greater Certainty and Facility than by any other Method yet known.

Of SATURN.

Saturn, the remotest of all the Planets, is about 777 Millions of Miles from the Sun ; and, travelling at the Rate of 18 Thousand Miles every Hour, performs his annual Circuit in 29 Years, 167 Days, and 5 Hours, of our Time ; which make only one Year to that Planet. His Diameter is 67,000 Miles ; and, consequently, near 600 Times as big as our Earth.

He is surrounded by a thin broad Ring, as an artificial Globe is by its Horizon. This Ring appears double when seen through a good Telescope. It is inclined thirty Degrees to the Ecliptic, and is about 20 Thousand Miles in Breadth, which is equal to its Distance from the Planet on all Sides. There is Reason to believe, that the Ring turns round its Axis, because, when it is almost Edgeways to us, it appears somewhat thicker on one Side of the Planet than on the other ; and the thickest Edge has been seen on different Sides at different Times. But *Saturn* has no visible Spots whereby to determine the Time of his turning round his Axis, or the Length of his Days and Nights.

The Sun, as seen from the Planet *Saturn*, appears only one ninetieth Part as large as to us, and the Light and Heat are in the same Proportion to ours. But to compensate for the small Quantity of the Sun's Light, he has five Moons, all moving round him on the Outside of his Ring, and nearly in the same Plane with it ; by which Means, and the Light it receives from its stupendous Ring, the Planet is sufficiently illuminated.

Of the FIXED STARS.

As the Planets are, like our Earth, opaque, spherical Bodies, shining with the borrowed Light of the Sun, round which they all circulate with admirable Harmony and Order ;

der ; so likewise the Sun, and all the fixed Stars, which shine with their own native Light, and remain immoveable in their Places, are to be considered as Bodies of the same Kind and Nature. The Reason why our Sun appears to us so great and bright in Comparison of the Stars, whose weaker Light disappears as soon as the Sun begins with his Beams to refresh and illuminate our Habitation, is, that the Earth, at an immense Distance from all the rest of the Stars, keeps near to the Sun, round whom she always circulates ; for a Spectator placed as near any of them as we are to our Sun, would see a Body as large and bright as the Sun appears to us, and, in every Respect, similar to our Sun ; And a Spectator as far distant from our Sun as the fixed Stars are from us, would observe our Sun as small as a Star, and would, doubtless, reckon the Sun as one of them in numbering the Stars. All the fixed Stars, therefore, are Suns, and the Sun differs in nothing from a fixed Star.

Though the Distance of the Earth from the Sun is so great, that to a Spectator in the Sun it would appear no bigger than a Point ; yet that Distance is so very small in Comparison of the amazing Distance of the nearest fixed Star, that, if the whole Orbit in which the Earth moves round the Sun were seen from a Star, it would appear no bigger than a Point ; for undoubted Observations have demonstrated, that the nearest fixed Star is, at least, 10,000 Times farther from us than we are from the Sun.

Hence it follows, that though the Earth approaches nearer to some fixed Stars at one Time of the Year, than it does at the opposite Time, by the whole Interval of the Diameter of it's Orbit, the Stars will not, on that Account, seem bigger when it is nearest to them, nor will the Position of any two Stars be sensibly changed by the Motion of the Earth. For even here on Earth, if there are two Towers near one another, if they are viewed by a Spectator ten Miles distant from each, if this Spectator approach nearer to them only by one Pace, which is the ten thousandth Part of the Distance, he can no Ways perceive the Towers bigger, or their Distance from one another greater, by moving so small a Distance. After the same Manner the Earth approaching a fixed Star, and coming nearer to it by the ten thousandth Part of the Distance between the Earth and it, a Spectator on the Earth, on Account of so small a Change of Place, will not find any perceivable Distance

Distance either in the Magnitude or Position of the Star.

Since the fixed Stars are at so immense a Distance, it may be asked, How it is possible for them to be seen at all? But it should be remembered, that all flaming and fiery Bodies can be seen at very great Distances. Thus the Flame of a Candle, in the Night-Time, is easily perceived at the Distance of two Miles, whereas an opaque Object in the Day-Time, though strongly illuminated with the Sun, as six Times bigger than the Flame of a Candle, is not to be observed with the naked Eye at that Distance. For the native Light that these fiery and flaming Bodies emit, is stronger and more piercing than the Light reflected from opaque Objects; for all Light is much weakened by Reflexion.

Hence it is evident, that all these Stars, which remain immoveable in the Heavens, are Bodies of a fiery Nature, as our Sun is; nor are they much less, nor much bigger, than he, and are therefore to be considered as so many Suns. It is not to be imagined, that all these Suns are planted in one concave Surface of a Sphere so as to be all equally distant from us; but it is more reasonable to suppose, that they are spread every where through the vast indefinite Space of the Universe, and that they are at great Distances from one another; so that there may be as great a Distance between any two of them that appear next to each other, as there is between our Sun and the nearest fixed Star. Hence a Spectator, who is near any one of these fiery Bodies, will look only on him to which he is nearest as a real Sun, the rest he will consider as so many small shining Stars fixed in the heavenly Arch.

Nor is it improbable that the Almighty, who always acts with infinite Wisdom, and does nothing in vain, should create so many Suns, and place them alone in indefinite Space, at such amazing Distances from one another, without forming other Bodies near them to be nourished, animated, and refreshed with the Heat and Light of these Suns. Those who affirm that God created these prodigious Bodies only to give us a small dim Light, must entertain a very mean Opinion of the divine Wisdom. It is far more reasonable to suppose, that every Sun is surrounded with a Number of Planets peculiar to himself, which, in different Periods, and at different Distances, perform their Circulations

lations round their proper Sun; and who knows, but some of these Planets may have Moons, and other Bodies, to attend them in their annual Révolutions?

Hence we may form to ourselves an admirable magnificent Idea of the Creation, by imagining an infinite Space, in which there are placed innumerable Suns, which, though they appear to us like so many small Stars, yet are Bodies that equal our Sun in Magnitude, Light, and Glory; and each of them constantly attended with a Number of Planets which dance round him, and constitute so many particular Worlds, or Sytems; every Sun doing the same Office to his proper Planets in illuminating, warming, and cherishing them, that our Sun performs in the Sytem to which we belong.

We should therefore consider the whole Universe as a glorious Palace for an infinitely great and omnipresent God; and that all the Worlds, and Sytems of Worlds, are so many Theatres in which he displays his Divine Power, Wisdom, and Goodness.

*Of the Magnitude, Order, and Constellation of the
FIXED STARS.*

The fixed Stars appear to be of different Bignesses, not because they really are so, but because they are not all equally distant from us. Those that are nearest will excel in Lustre and Bigness; the more remote Stars will give a fainter Light, and appear smaller to the Eye. Hence arises the Distribution of Stars, according to their Order and Dignity, into Classes; the first Class, containing those which are nearest to us, are called Stars of the first Magnitude; those that are next to them are Stars of the second Magnitude; the third Class comprehends those of the third Magnitude, and so on till they come to Stars of the sixth Magnitude, which comprehends the smallest Stars that can be seen with the naked Eye. For all the other Stars, which are only seen by the Help of a Telescope, and which are thence called telescopical, are not reckoned among these six Orders. But though this Division of Stars into six Degrees of Magnitude is commonly received by Astronomers; yet it is not to be supposed that every particular Star is exactly to be ranked according to a certain Bigness, and that all in the same Class are absolutely of the same Size; for, in Reality, there are almost as many Orders of these fiery Globes, as there

there are Stars, few of them being exactly of the same Bigness and Lustre. And even among those Stars, which are reckoned of the brightest Class, there appears a great Variety in their Magnitudes; for *Sirius*, or *Arcturus*, are each of them brighter than *Aldebaran*, or the *Bull's Eye*, or even than the *Virgin's Spica*, and yet all these Stars are reckoned of the first Magnitude: And there are some Stars of such an intermedial Order, that Astronomers have differed in classing them; some putting the same Stars in one Class, and some in another.

Astronomers not only mark out the Stars, but, that they may the better bring them into Order, they distinguish them by their Situation and Position in respect to each other; and therefore they distribute and divide them into *Asterisms* or *Constellations*; which implies a System of several Stars seen in the Heavens near one another; and, for the better distinguishing and observing them, they reduce the Constellations to the Form of certain Animals, as Men, Bulls, Bears, &c. or to the Image of some Things known, as of a Crown, a Harp, a Balance, &c. The Ancients took these Figures from the Fables of a false Religion, and the Moderns still retain them, that they may avoid the Confusion that would arise by making new ones, which would greatly perplex them, when they compared the modern with the ancient Observations.

The Division of the Stars, by Images and Figures, is of great Antiquity, and seems to be as old as Astronomy or Philosophy itself: For in one of the most ancient Books extant, I mean that of *Job*, Mention is made of *Orion*, *Arcturus*, and the *Pleiades*; and we meet with the Names of many of the Constellations in the Writings of the ancient Poets, *Homer* and *Hesiod*. For it was necessary, for the Improvement of Astronomy, to distinguish the Stars in this Manner, and so bring them into some Order.

Since the Distance of the Stars is immensely great, it is no Matter in what Part of our System the Observer resides, whether in the Sun, the Earth, or even in *Saturn*. For Spectators, in either of those Places, will see the same Face of the Heavens, the same Stars with the same Magnitude, and the same Figure of the Constellations; and the Heavens, which seem to surround and involve us all, will have the same Face.

Astronomers divide the starry Firmament into three Regions, the Middle of which comprehends those Stars which have their Situations near the Planes of the Orbits in which the Planets move; this Part of the Heavens they call the *Zodiac*, because the Constellations there placed seemed for the most Part to represent some Animal or living Creature. In this Space the Planets are always to be seen, and none of them ever transgress it's Bounds. Upon each Side of this Zone lie the other two Regions of the Heavens, one of which is called the North, and the other the South Part of the Heavens.

The Ancients divide the starry Firmament into forty-eight Images or Constellations, twelve of which filled the *Zodiac*, and gave their Names to the twelve Signs, or Portions, into which it is divided. These Names are as follow: *Aries*, or the *Ram*; *Taurus*, or the *Bull*; *Gemini*, or the *Twins*; *Cancer*, or the *Crab*; *Leo*, or the *Lion*; *Virgo*, or the *Virgin*; *Libra*, or the *Balance*; *Scorpio*, or the *Scorpion*; *Sagittarius*, or the *Archer*; *Capricornus*, or the *Goat*; *Aquarius*, or the *Water Bearer*; and *Pisces*, or the *Fishes*.

In the Northern Region are twenty-one Constellations viz. the *Lesser Bear*, the *Great Bear*, the *Dragon*, *Cepheus*, *Boötes*, the *Northern Crown*, *Hercules*, the *Harp*, the *Swan*, *Cassiopeia*, *Perseus*, *Andromeda*, the *Triangle*, *Auriga*, *Pegasus*, or the *Flying Horse*, *Equuleus*, the *Dolphin*, the *Arrow*, the *Eagle*, *Serpentarius*, and the *Serpent*: Afterwards they increased their Number with the two following, viz. *Antinous*, which was made of the Stars near the *Eagle*, but not included in any Constellation; and *Berenice's Hair*, consisting of Stars near the *Lion's Tail*.

On the South Side of the *Zodiac* are fifteen Constellations, which were known to the Ancients, viz. The *Whale*, the *River Eridanus*, the *Hare*, *Orion*, the *Great Dog*, the *Lesser Dog*, the *Ship Argo*, *Hydra*, the *Cup*, the *Crow*, the *Centaur*, the *Wolf*, the *Altar*, the *Southern Crown*, and the *Southern Fish*: To these twelve more are lately added, which are not visible to us who inhabit the Northern Regions, because of the Convexity of the Earth; but are very conspicuous in the Southern Parts. These are, the *Phoenix*, the *Crane*, the *Peacock*, the *Indian*, the *Bird of Paradise*, the *Southern Triangle*, the *Fly*, the

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Chamelion,

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Chamelion, the Flying Fish, the Toucan, or American Goose, Hydrus, or Water Serpent, and Xiphias, or the Sword Fish.

Without the Compass of the Constellations, there are several Stars which cannot be reduced to any of the Forms above-mentioned; and these are called unformed Stars, out of which some great Astronomers have formed new Constellations, as *Charles's Heart*, and *Sobieski's Shield*.

The *Galaxy*, or *Milky Way*, is also to be reckoned among the Constellations: This is a broad Circle of a whitish Hue, resembling Milk; in some Places it is double, but for the most Part consists of a single Path, and goes round the whole Heavens. The great *Galileo*, with his Telescope, discovered, that the Portion of the Heavens which this Circle passes through, was everywhere filled with an infinite Multitude of exceedingly small Stars, which, though they cannot, by Reason of their Smallness, be seen distinctly by the naked Eye, yet with their Light they all combine to illuminate that Region of the Heavens where they are, and diffuse through it a shining Whiteness.

By the Help of Constellations the ancient Astronomers were able to distinguish and mark out the Stars of the Firmament, and, by great Care and Industry, they digested them into Catalogues, which have been handed down to us. These Catalogues have been greatly increased and corrected by our modern Astronomers; so that they now contain, not only the Stars visible to the naked Eye, but also many that cannot be seen without the Assistance of a Telescope.

Hipparchus, the *Rhodian*, about 120 Years before the Birth of *Christ*, was the first among the *Greeks* who reduced the Stars into a Catalogue: "Daring, according to *Pliny*, to undertake a Thing which seemed to surpass the Power of a Divinity, that is, to number the Stars for Posterity, and to reduce them to Rule; having contrived Instruments by which he marked the Place and Magnitude of each Star. So that by this Means we can easily discover, not only whether any of the Stars perish, and others grow up, but also, whether they move, and what is their Course, and also if they grow bigger or less; by which Means he has given to Posterity a valuable Treasure."

"terity the Possession of the Heavens, if any of them have
"Subtilty enough to comprehend them."

Hipparchus, from his own Observations, and those of the ancient Astronomers who lived before him, inserted into his Catalogue 1022 Stars, and annexed to each of them their proper Longitude and Latitude, which they had at that Time. *Ptolemy* enlarged *Hipparchus's* Catalogue with four Stars only, making the Number 1026. After *Ptolemy*, *Ulug Beighi*, the Grandson of the great *Tamerlane*, observed again the Stars, and reduced 1017 of them into a Catalogue. In the 16th Century, and that which followed, Astronomy was cultivated by several famous Men; among whom we may chiefly reckon *Rigiomontanus* and *Copernicus*. But the noble Danish Astronomer *Tycho Brahe*, far surpassed the Labours of all who preceded him, in adorning and perfecting this Science. He procured very large and exquisitely well-contrived Instruments for observing the heavenly Objects; and particularly determined the Places of 777 fixed Stars, and reduced them into a Catalogue, their Places being all calculated from his own Observations. *Kepler*, indeed, in his *Rudolphin* Tables, gives us a Catalogue of the Stars he calls *Tychonic*, containing 1163 Stars; but all of them, except the 777 observed by *Tycho*, were taken from *Ptolemy* and other Authors.

About the same Time with *Tycho* flourished *William Prince of Hesse*, who likewise observed the Stars; he had two Mathematicians to assist him, namely, *Rothmannus* and *Byrgius*, with whom, by 30 Years continued Labour, he computed the Places of above 400, all founded on their own Observations, and inserted in a Catalogue.

The Jesuit *Ricciolus* augmented the Catalogue of *Kepler* with 305 Stars, by which Means their Number was increased to 1468; but this Catalogue was not founded on his own Observations; for he and his Companion *Grimaldi* did not take the Places of above 101 Stars with their own Instruments, the rest being transcribed from *Tycho*, *Kepler*, and other Authors: But it is surprising that *Ricciolus* should insert in his Catalogue several Stars which were very visible in *Tycho's* Time, and observed by him, but were vanished in the Days of *Ricciolus*, though they are preserved in his Catalogue.

Bartholomaeus, in his Description of a four Feet Globe, published at *Strasburg* in 1635, tells us, that *Bayer* had described,

described, in his *Uranographia*, the Places of 1725 Stars, and boasts that he had himself inserted 1762 Stars on his Globes; but does not tell us from whom they were taken, or in what Year they were observed.

The Stars near the Antarctic Pole, which cannot be seen in our Climate, were first accurately observed by the great Dr. *Halley*, who, animated with a Love for the Sidereal Science, undertook a long and dangerous Voyage to the Island of *St. Helena*, in order to take the Position of the Stars within the Antarctic Circle, and published a Catalogue of 373 of them, whose Places he adapted to the End of the Year 1677.

John Hevelius of *Dantzick*, a Man of prodigious Industry and unwearied Diligence, being well furnished with very exact Instruments, computed the Places of 1553 Stars, and composed a new Catalogue containing 1888, namely, 950 known to the Ancients, 603 new ones, which no Person had ever rightly observed before; and 335 round the Antarctic Pole, taken out of Dr. *Halley's* Catalogue.

But the largest, and far the most complete Catalogue of the Stars is owing to the assiduous Application of that great Astronomer Mr. *Flamsteed*, late Professor of Astronomy at *Greenwich*, containing about 3000. So that there is not the least Star to be seen in the Heavens, whose Place and Situation is not better known than the Position of many Cities through which Travellers daily pass. Nor is it any Wonder that Astronomers should take so much Pains, and so assiduously watch the fixed Stars in order to determine their Places, since, without knowing their true Positions and Places, it would have been impossible to have found out the Motions of the Planets, or to have delineated their Orbits: For the whole Science of Astronomy is founded on the Observations of the fixed Stars,

But, among the 3000 Stars inserted in Mr. *Flamsteed's* Catalogue, there are many that cannot be seen without a Telescope, for a good Eye can rarely reckon an hundred Stars at any one Time in the Heavens. This Assertion will probably surprize many Persons, as they seem, in a fine Winter's Night, to be innumerable. This Appearance, however, is only a Deception of our Sight, arising from their vehement and strong Twinkling, or Scintillation, while we look on them confusedly, and without reducing them to any Order; but he who will distinctly view them, will not find one but what Astronomers have
observed

observed and inserted in their Catalogues : And if any Person will take a celestial Globe of the larger Size; and compare it with the Heavens, he will hardly find a single Star but what is marked on the Surface of the Globe.

In the mean Time, however, it must be acknowledged, that the Number of the Stars is prodigiously great, and almost infinite ; for whoever will view the Stars with a good Telescope, will find every where a prodigious Number of them altogether indiscernible by the naked Eye, especially in the *Milky-Way* ; where they are so thick, that though they cannot be seen separately, yet they give that Region of the Heavens, where they are placed, a Lustre exceeding all the rest.

The famous Dr. *Hock*, directing his Telescope to the *Pleiades* or *Seven Stars*, though there are now only six to be seen with the naked Eye, counted in that small Compass 78 Stars ; and by making Use of longer and more perfect Telescopes, he discovered a great many more of different Magnitudes : And *Antonius Maria de Reita* affirmed, that he numbered 2000 Stars in the single Constellation of *Orion*.

The ancient Philosophers affirmed, that the Heavens were incapable of any Change, that the celestial Matter was of a different Kind from any Thing we are acquainted with, and that it's Firmness far surpassed that of the most durable Diamond. But Observations have demonstrated that they were mistaken, and that celestial Matter is corruptible and capable of undergoing several Transmutations. We know that in the Sun and Planets new Bodies are frequently produced and generated, while others are corrupted and perish, and that the Faces of the Planets undergo many Changes. Nor are these Alterations peculiar to our planetary System ; the Principle of Generation and Corruption is diffused much farther, it reaches even the most distant fixed Stars, and all the Bodies in the Universe are subject to it's Dominion ; nothing but our Minds and spiritual Part is exempted from it's Jurisdiction ; for the heavenly Bodies, as well as the terrestrial, are changeable and perish. Several Stars, which were observed by the Ancients, are long since vanished, and we have known some new ones make their Appearance in the Heavens unknown to them, which will also, in Time, vanish and disappear. There are also some Stars, which for a Time are extinguished, and

become invisible, but after a certain Period they again assume their former Lustre. The most remarkable of these Stars is situated in the Neck of the *Whale*, withdrawing from our Sight eight or nine Months of a Year, and during the other three or four, is constantly changing his Lustre and Magnitude. It is probable that the greatest Part of the Surface of this Star is covered with Spots and opaque Bodies; so that, as it turns round it's Axis, it sometimes shews us it's bright Part, and sometimes it's dark Side. But the very Spots themselves of this Star are liable to Changes; for it does not every Year appear with the same Lustre; sometimes it resembles a Star of the second Magnitude, at others it can hardly be reckoned among those of the third Order. Nor are the Times of it's appearing always of the same Duration; for in some, after three Months, it takes it's Leave of us; in others we enjoy its Light during the Space of four.

We are also assured from the Observations of Astronomers, that some Stars have been observed which never were before, and for a certain Time have distinguished themselves by their superior Lustre, but afterwards decreasing by Degrees vanished, and could be seen no more. One of these Stars being first seen and observed by *Hipparchus*, the chief of the ancient Astronomers, induced him to attempt making a Catalogue of the fixed Stars, that Posterity might know when any of the Stars perish, and new ones appear in the celestial Regions.

After many Ages another new Star appeared to *Tycho*, and the Astronomers who were contemporary with him; which, like the new Star in the Time of *Hipparchus*, induced him likewise to make a new Catalogue of the fixed Stars. This Star made it's Appearance in the Constellation *Cassiopeia*, and was first observed about the Middle of November 1572, and never changed it's Place at the Time it was visible, which continued for the Space of sixteen Months, when it diminished by Degrees, and at last became invisible. It's Magnitude exceeded that of *Syrius* or *Lyra*, which are the brightest of the fixed Stars, and even vied in Lustre with *Venus* when nearest to us: So that it was often seen in the Day Time. *Livicius*, from the Histories of those Times, tells us, that in the Time of the Emperor *Otho*, about the Year 945, a new Star appeared in *Cassiopeia*, which nearly resembled

resembled that of the Year 1572. He also says, that, in the Year 1264, an eminently bright Star was seen in the Northern Region of the Heavens, near the Constellation *Cassiopeia*, without any proper Motion. It is probable that these two Stars might be the same with that which was seen by *Tycho*, and that in about 140 Years the same Star may again make it's Appearance.

In the Year 1600 *Kepler* observed another new Star in the *Swan's Breast*, which continued visible for many Years, and in *Hevelius's* Time looked like a Star of the third Magnitude; but at last became invisible from the Year 1600 till 1666, when it was again observed by *Hevelius* as a Star of the sixth Magnitude, just in the Place where it first appeared, and where it still continues.

We are assured by the Catalogues of the fixed Stars, that many of these shining Globes have been observed by the Ancients, and some even by *Tycho*, which are now invisible, and particularly in that remarkable Cluster called the *Pleides*, or *Seven Stars*, which formerly consisted of seven Stars visible to the naked Eye, though now we can only reckon six. Perhaps many of these Stars have lost their Brightness by a prodigious Number of Spots, which entirely covered, and, as it were, overwhelmed them.

An Account of ENGLAND.

Situated	between	$\left\{ \begin{array}{l} 12\ 00 \\ 20\ 00 \\ 50\ 00 \\ 55\ 50 \end{array} \right\}$	of Longitude. of Latitude.	its greatest	$\left\{ \begin{array}{l} \text{Length from N to S} \\ \text{is about 320 Miles.} \\ \text{Breadth from E to W} \\ \text{is about 290 Miles.} \end{array} \right\}$
It is divided into six Circuits, viz.		$\left\{ \begin{array}{l} \text{Western,} \\ \text{Oxford,} \\ \text{Home,} \\ \text{Norfolk,} \\ \text{Midland,} \\ \text{North.} \end{array} \right\}$		Chief Towns,	$\left\{ \begin{array}{l} \text{Salisbury,} \\ \text{Oxford,} \\ \text{Canterbury,} \\ \text{Norwich,} \\ \text{Lincoln,} \\ \text{York.} \end{array} \right\}$
Western Circuit contains.		$\left\{ \begin{array}{l} \text{Cornwall,} \\ \text{Devonshire,} \\ \text{Dorsetshire,} \\ \text{Hampshire,} \\ \text{Somersetshire,} \\ \text{Wiltshire.} \end{array} \right\}$		Chief Towns,	$\left\{ \begin{array}{l} \text{Launceston,} \\ \text{Exeter,} \\ \text{Dorchester,} \\ \text{Winchester,} \\ \text{Bristol,} \\ \text{Salisbury.} \end{array} \right\}$

Oxford Circuit	contains	{ Berkshire, Oxfordshire, Gloucestershire, Monmouthshire, Herefordshire, Worcestershire, Staffordshire, Shropshire.	Chief Towns,	{ Reading, Oxford, Gloucester, Monmouth, Hereford, Worcester, Stafford, Shrewsbury,
Home Circ.	contains	{ Essex, Hertfordshire, Kent, Surry, Suffex,	Ch. Towns,	{ Colchester, Hertford, Canterbury, Southwark, Chichester,
Norfolk Circuit	contains	{ Norfolk, Suffolk, Cambridgeshire, Huntingdonshire, Bedfordshire, Buckinghamshire.	Chief Towns,	{ Norwich, Ipswich, Cambridge, Huntingdon, Bedford, Buckingham.
Midland Circuit	contains	{ Lincolnshire, Nottinghamshire, Derbyshire, Rutlandshire, Leicestershire, Warwickshire, Northamptonshire.	Chief Towns,	{ Lincoln, Nottingham, Derby, Okeham, Leicester, Warwick, Northampton.
North Circuit	contains	{ Yorkshire, Durham, Northumberland, Lancashire, Westmoreland, Cumberland.	Chief Towns,	{ York, Durham, Newcastle, Lancaster, Appleby, Carlisle.

Middiesex and *Cheeshire* are not commonly reduced to any of these Circuits; the first, because of it's near Neighbourhood to *London*, and the other as being a County Palatine, having it's own Judges and Counsellors peculiar to itself.

England is bounded on the East by Part of the *German Ocean*; on the West by *St. George's Channel*, on the North by *Scotland*; and on the South by the *English Channel*. The Air of this Country is mild, sweet, and temperate, not piercing cold in Winter, nor scorching in Summer.

The

The Sun shines, or is above the Horizon, the longest Day in the northernmost Parts, about 17 Hours and a Half, and on the shortest in the southernmost, almost 8 Hours; and the Nights are proportionably long, hot, cold, &c. The chief Commodities are Corn, Cattle, Tin, Copper, Lead, Iron, Timber, Coals, Wool, Cloth, Stuffs, Linen, Hides, Tallow, Butter, Cheese, Beer, &c.

The Counties, Cities, Market-Towns, and Parishes, in England and Wales.

Counties in England.	Cities.	M. T.	Parish.	Counties in England.	Cities.	M. T.	Parish.
Bedford	0	10	116	Salop	0	14	170
Berks	0	12	140	Somerſet	3	31	383
Buckingham	0	13	185	Stafford	1	18	130
Cambridge	1	8	163	Suffolk	0	30	575
Cheſter	1	13	85	Surry	0	8	140
Corawall	0	10	161	Suſſex	1	11	312
Cumberland	1	15	58	Warwick	1	15	158
Derby	0	10	106	Westmoreland	0	9	26
Devon	1	31	304	Wilts	1	23	304
Dorſet	0	20	248	Worceſter	1	11	152
Durham	1	6	118	York.	1	49	563
Effex	0	21	415	<i>Wales.</i>			
Glouceſter	1	26	280	Angleſea	0	2	24
Hampſhire	1	16	253	Brecknock	0	4	61
Hertford	0	18	120	Cardigan	0	4	46
Hereford	1	7	176	Caermarthen	0	8	81
Huntingdon	0	6	79	Caernarvon	0	6	68
Kent	2	29	480	Denbigh	0	4	57
Lancaſter	0	26	61	Flint	0	3	28
Leiceſter	1	12	192	Glamorgan	0	9	118
Lincoln	1	15	630	Merioneth	0	3	37
Middleſex	2	7	73	Montgomery	0	8	47
Monmouth	0	7	227	Pembroke	0	8	145
Norfolk	1	31	660	Radnor.	0	4	59
Northampton	1	13	326	<i>Iſlands.</i>			
Northumberland	0	6	460	Man-Iſland	0	5	14
Nottingham	0	9	168	Wight-Iſland	0	1	14
Oxford	1	15	280	Jerſey	0	1	12
Rutland	0	2	48	Guernſey.	0	1	10

The Use of the foregoing Tables.

The first Column is the Names of the Counties in *England* and *Wales*. The second, the Number of Cities. The third, the Number of Market-Towns. The last Column, the Number of Parishes.

The Number of Shires in *England* and *Wales* are 52. Parliament Men 510. Market-Towns 713. Parishes 9291. Bishopricks 26. Castles once 186. Rivers 555. Chaces 13. Forests 68. Parks once 781. Cities 25. Bridges 956. Universities 2.

Note, The *Shires*, it is said, were first made by King *Alfred*, about the Year of our Lord Christ 880, for the easier and speedier Administration of Justice.

Note likewise, That, instead of *Hundreds*, *Durham* is divided into *Wakes*, *Cumberland* and *Westmorland* into *Wards*.

Also some Counties are more generally divided than into *Hundreds*; *Yorkshire* into three *Ridings*; *Kent* into five *Laths*; *Sussex* into six *Rapes*; *Lincolnshire* into three Parts, *Lindsey*, *Keystewen*, and *Holland*.

Monthly Observations in GARDENING.

JANUARY. There is little to be done in Gardens this Month; but you may gather Sheep's Dung to mix with Earth to lie rotting a Twelve-month, to lay Flowers with: And you may cut off the downright Roots of such Trees as yearly bloom, and bear no Fruit, burying a dead Dog or Cat under the Tree; often casting Soap-Suds near the Root, or the Dirt of the Sinks of Wool-Combers, or Street Dirt of the Sinks of Great Towns.

FEBRUARY. If the Frost has killed the Cabbage-plahts you set in *September*, sow the Seeds now in a Hot-Bed thus made: Dig a Grave of what Length and Breadth you please, where the Sun shines most, and sheltered from the North and East Winds, about two Feet deep, tread it full of Horse-Litter with the Dung, and cover the Dung near Half a Foot thick, with fat Earth sifted, covering it with Pease Straw or Mats, only in cold Nights; the Seeds also of Musk-Melons, Colliflowers, Cucumbers, Purslain, and Lettice, may be sowed therein. You may now plant the Suckers of Currants and Gooseberries, though *October* is the best Time: Sow Garden-Pease; for the Beans, set them about one Foot asunder with a Setting-Stick.

MARCH.

MARCH. Trim the Leaves of Clovegilliflowers with a Pair of Scissars; sow Parsley, Carrots, and Turnip Seeds, and Parsnips; and set Carrots and Turnips to raise Seed; set Onions and Leeks to put the Tops among Pot-herbs; prune the Apricot late; take the Litter from off the Asparagus Bed; dig it with a Fork a little, and sift some good Earth thereon; if you make a new Bed, do it as the hot Bed last Month, and lay the same Roots you may buy of a Gardener on it; or you may sow the Seeds in a Bed of good Earth, and it may do well enough, so as you take off all Weeds; and it is not so tender that it needs covering in Winter, but to fatten the Bed, and cover them by sifting Earth on them, and let them run to Seed two Years before you cut the Buds to eat; dig the Weeds and Tops of the Artichoke into the Bed, laying the Earth level, leaving but one or two of the strongest to each Root, casting away the Suckers: Plant the shortest-stalked Cabbage Plants near a Yard asunder, setting them pretty deep on the Edge of your Carrot-ground; being set one Month, draw Earth upon one Side of the Stalks, to lay them flat upon the Earth, and they will cabbage the better: Sow Clovegilliflower Seed. A Parsley Bed may serve for Use many Years for a Family, if you take Care to pluck off such Shoots as are likely to shed, as often as you see them feed. When you see the Tulip-Leaves begin to peep out of the Earth, spread your Flower-Garden all over with fat sifted Earth, mentioned in *January*, or Wood-Pile Earth, or the Earth that Moles work up in a rich Pasture, and when you see a very great Hill lately cast up, dig to the Bottom to find her Nest. Now you may dig in rotten Horse-dung into your Garden, set more Beans and Pease, and graft.

APRIL. In this Month chuse the Evening of a rainy Day to set the Cuttings of Thyme, Hyssop, Marjoram, Savory, Penny-Royal, Balm, Mint, &c. for Winter Greens, Hedges to be clipped square after Rain, often letting such Herbs grow out of the Flower Garden for Use: You may also part the Roots of most Things, cutting off their Tops and most of their thready Roots before you set them; the Boughs of Fruit-Trees, that grow too near each other, may be set at some certain Distances, with Weights or Cords, to remain so for four or five Weeks. Young Fruit-Trees should be slit in the Bark from the Head to the Root,

at three or four Sides, to prevent their being hide bound. Cut off all the dead Twigs out of Bays, Lawrel, Roses, and all other Bushes; plant Colliflowers, and cut off the Strings of all Strawberries, except the Wood and White ones; remove the young Clovegilliflower Plants sowed of Seed the last Month; set Rosemary-Slips (twisting the Ends) very close to a Wall, and with Leathers nail it thereto while it is young, but not too close to the Wall. If the Vine hath no Leaves before the 20th Day of this Month, all the cold Weather is not past.

MAY. Dig Dung into a Bed to sow Purslain in. If the Ground is not wet nor cold, sow Scarlet and Kidney Beans in light Ground, covering them lightly, because a Bean comes up, and turns up two Leaves. Where any Places of your Crop for Carrots miss coming up, there make Holes like deep Scuttles, which tread almost full of Horse-dung, covering them with Earth; [See *Hot-Bed* in February;] and sow Cucumbers therein, nip off the superfluous Branches, and watering when Need is. The Garden-Beans being in full Bloom, clip off the Tops of the Stalks, and the Tops of the other Bushes, where they crumple up, because Vermin breeds in them. Tulip-leaves being dry, you may take up the Roots; and being dried from the Dirt, put them in a Box, and cover them with Sand: Take them up once in three or four Years, if you will, and set them again in *September*. Put the Off-sets in a Bed by themselves; if you take not up the Roots, cut not off their Leaves.

JUNE. From your Fruit-trees cut off all Bruises, Gums, Stubs of dead Wood, and cankered Places. Take up the *Anemone* Roots, and dry them, and set them again in *February*; [see *Inculcating*.] Having gathered all your Roses, clip the Tops of the Bushes, and the Tops of your monthly Rose often in Summer. To increase the Double Stock-gilliflower, about this Time, cut off a Slip about five or six Inches long, that is, a pretty strong one that never had a Flower on it, nor like to have one that Summer; then turn up the Bark about an Inch, cutting the Sides thereof, so as the Bark may stand like the Spokes of a Cart-wheel, and cut off the woody Inch, and set it pretty deep in some shady Place, first cutting off the Top to the Bud, and the other Leaves, shading and watering it for a Time;

cut

cut only the longest Tops of your Rasp Hedge even with the other.

JULY. Gather the Seed of Clove-gilliflowers, and keep it in the Husk till you sow it in *March* or *August*; and by the Middle of this Month finish the Layering them. Having gathered your Strawberries, cut off all the Leaves after Rain, except the Bed of White and Wood Strawberries, which you may thin and weed at the latter End of *March*, and soon after that make a new Bed, by setting the smallest Roots, pressing the Earth very hard to them, that the Worms force them not out; remembering that they will want watering often, as do Colliflowers, Cucumbers, &c.

AUGUST. Sow the first ripe Cabbage-seed, also Coleworts, Turnips, Marygolds, Box Poppies, Spinage, and Lettice; sow the Seeds of *Auriculas*, or *Bears-Ears*, in a Pot of good Earth; let it stand abroad: The next Summer plant out the strongest. If the Earth is well soaked with Rain, this is rather a better Time than *April* to take up all the Herbs and Flowers, and to dig Horse-dung therein that is very rotten. Now layer Bays, Lawrel, Rosemary, &c. as is shewed of Clove-gilliflowers, only instead of cutting that Place of them that is to lie under the Earth, run a blunt Awl three or four Times through the Place: In *March* following you may remove them, if taken Root, or stay till this Month. Clip off all the Stalks and Leaves from your Strawberries, except White, and Parsley, and Sorrel, also your Pot-herbs; and new Leaves will soon grow again.

SEPTEMBER. Dig a little Dung into a Bed, and therein set your strongest Cabbage-Plants, about two Inches asunder; water them very well that Evening, and no more; do so with the Plants of Coleworts, Marygolds, and Lettice: Set the Tulip-root you take out of the Earth thus: With a narrow Trowel make a Hole, then put in a Handful of Sand, on which set the Root, and earth it up; the Sand is to prevent the Root from growing too deep in the Earth. Having cut off the Stalks of your Clove-gilliflowers, set little short Sticks, and tie them to such Branches as may be beaten flat by Snow or Rain. Gather Apples after full Moon. Turnips and Carrots laid in Sand are a good Ballast for Ships at Sea.

OCTOBER.

OCTOBER. If you desire a Nursery for the raising of Stocks to graft on, sow the Seed of Crabs, and the Stones of other Fruit, and covering the Beds with Horse-Litter until *March*; at two Years End pluck up the strongest, and cut off all their Boughs close to their Bodies, and a little off the Tips, and all the strongest Roots close, especially downright Roots; then by a Line and a setting Stick set them near two Feet asunder, and at two Years End many of them may be ready to graft and inoculate on. Gather Fruit in a dry Day. Full Moon being past, the Bruises will not so soon rot: They best lie on Shelves in a Closet, where Frost cannot enter in Winter; but if the Apples happen to be frozen, touch them not until the Frost is gone out of them. In the same Closet fix small Lines from one Side to the other, to hang your Bunches of Grapes on, being cut off the Vine at the Beginning of *October*; and then prune your Vines, cutting off all the young Branches within two or three Inches of the main Branches to keep all Winter. Gather not the Grapes until they are soft, though the Frost comes: Better to have them withered than unripe; but if they continue green and hard till *November*, then make Vinegar of them.

NOVEMBER. If you desire to raise Cabbage-Seed, pluck up the best Cabbage by the Root, and set it again in some sunshiny Place so deep, that you can but see the Crown of it. Cut the Tops of your Artichokes, and make Trenches between the Rows, casting up the Earth upon the Roots as a Bank, and cover all the Bed with Horse-Litter; also cover the Asparagus Bed with Horse-Litter or good Earth.

DECEMBER. If you did not prune your Vine soon after you gathered the Grapes, now nail the strongest to the Wall with Shoemaker's Leather, each Branch near one Yard asunder, cutting off all the young Shoots within an Inch of each Knot, so will your pruning Work be little yearly. But when you have a long young Branch that begins near the Root, you may nail that to the Wall, and cut off an old Arm; by this Means, in Time, you may cause your Vine to look young again; yet the fewer Branches any Fruit-tree hath, the larger will the Fruit be. Lay Beasts' Blood and Sheeps' Dung to the Roots; or, about half a Yard from the Body of your old Vine, you
may

may pour a Quart of Man's Urine twice a Week, or oftener. And, in a very dry Time, wrap a List of Woollen about the Body, and the other End into a Bottle of Water, and it will suck out the Water.

Of INOCULATING, or GRAFTING.

GRAFTING is an artificial Transposing or Transplanting of a Twig or Scion, a Bud or Leaf taken from the Tree, or of some other Kind, and placed, or put to, or into, that of another, called *Grafting in the Cleft*.

The best Time for gathering Grafts is in the Middle of *February*. Observe that the Scion is to be cut below the Knot.

Grafting in the Cleft. — First cut or saw off the Top of the Stock to a curious Smoothness; then cut two Gashes with a sharp Knife; then, with small Wedges, sharpened according to the Bigness of the Graft, being thrust in, raise the Bark of the Stock, and put in the Graft, exactly shaped as the Wedge; then close it hard with your Hand, and bind it about with Clay and Horse-dung mixed. In this Manner may any Fruits be grafted, whether Apples, Pears, Plums, Cherries, &c. The Apple is commonly grafted on Crab-Tree Stocks.



THE
FAMILY COMPANION:
CONTAINING
RULES and DIRECTIONS
FOR

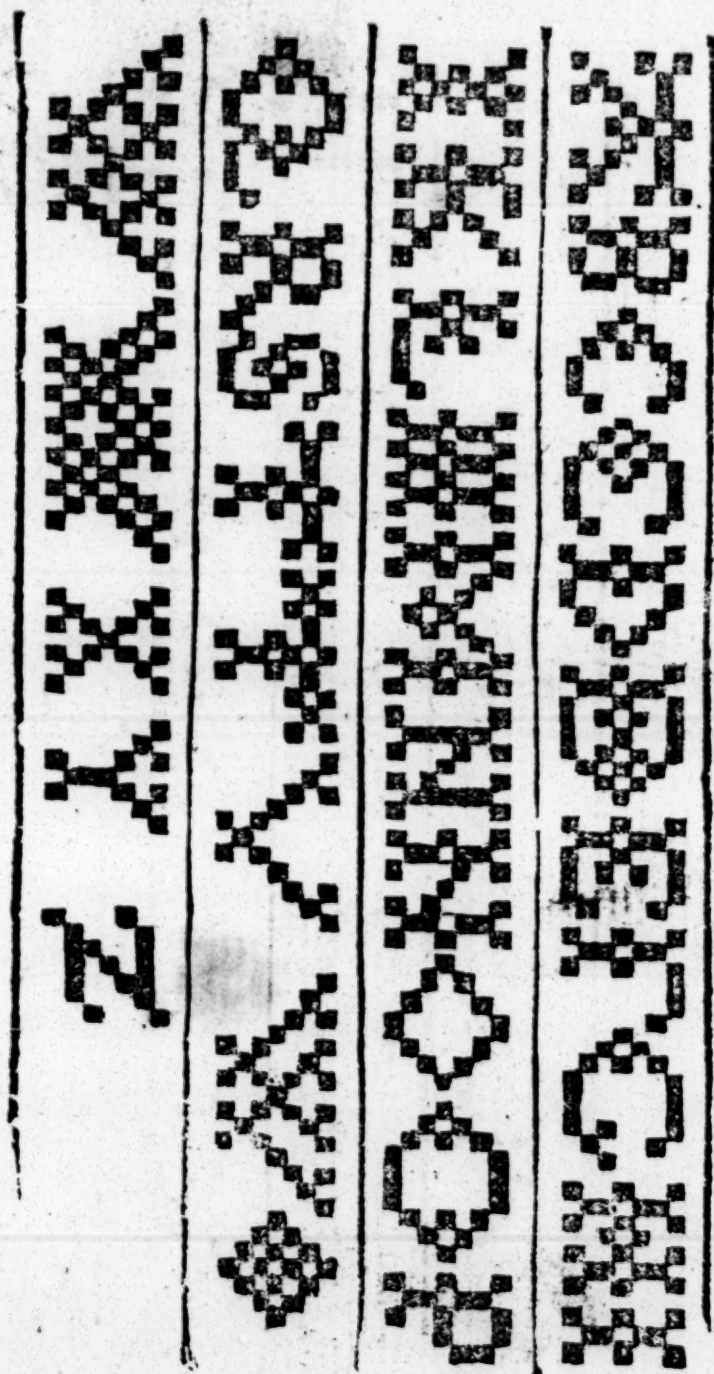
MARKING ON LINEN; how to make CYDER, MEAD, and WINES of our own Growth; with a Collection of choice and safe REMEDIES, very useful in FAMILIES.

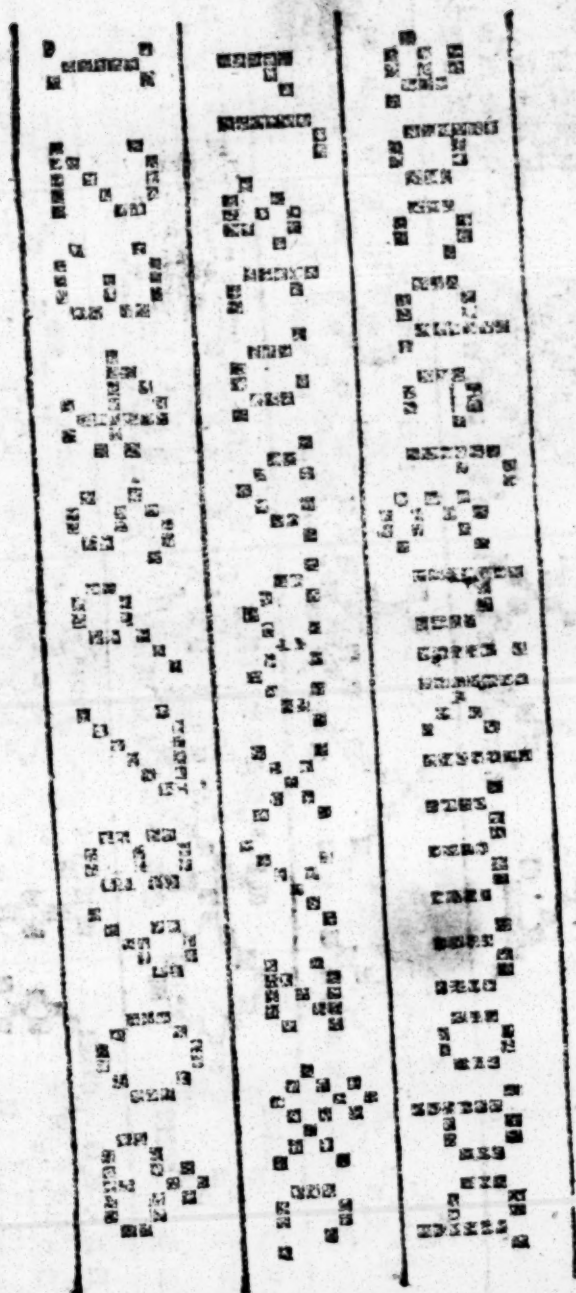


HAVING been pretty large on all the general Heads, which could any Ways inform our young Male Reader; it may not now be amiss to say some small Matter in Relation to the Instruction and Benefit of the young Female Reader. And, first,

OF MARKING.

This is indispensably necessary and useful for the training up the younger Sort of the Female Kind to the Needle, it being introductory to all the various and sundry Sorts of Needle-Work pertaining to that Sex; I have therefore set down the Alphabet in Capitals or great Letters, and small, likewise the Figures, that Girls or young Women, by frequent Practice, may soon attain to Perfection in marking on Linen. Here follow the Marking Copies:





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How to make good Cyder.—Stamp ripe Apples, and fill a Barrel with their Juice, to which put six bruised Pear-mains, stop it not very close; at six Week's End draw the Clear into a Tub that is clean washed and dried, and put to it a Beer-Glass full of White Wine, wherein an Ounce of Icing-glass is dissolved, and beaten with the White of an Egg; and to every 24 Gallons put 8 Pounds of brown Sugar well dissolved in some of the Cyder.

To make Mead at any Time of the Year.—Take Water 10 Quarts, Honey 1 Quart, Sugar 1 Pound, 30 Cloves, a Race or two of Ginger bruised, and two or three Sprigs of Rosemary; when the Water is near boiling put into it the Honey, and Sugar, and Spices; let it boil about half a Quarter of an Hour, skimming it often; then take it off the Fire, and squeeze into it four Lemons, and break their Rinds, and put them in also; when it is almost cold cover it in the Vessel, or Steen Pot, with Toasts of Wheaten Bread; first cover the Toasts with Barm or Yeast, and lay them on the Liquor; and when it has wrought (like new Ale) four or five Days, and will run clear, put it into Bottles, and stop them close; it will keep long in a cold Place. It is a pleasant Drink in Summer, in hot Weather.

To make Wines of our own Growth.

Gooseberry Wine.—The Berries being mellow, put them by Parcels into a Tub of Water, and cast out those Leaves that swim, and put them into a Sieve to drain out most of the Water, and stamp them, or only crack them in a Trough-Bowl, as Apples are stamped for Cyder; then put those Stampings into a Tub that hath a Tap and Taphose, and put almost twice as much cold Water to them as the Stampings are for Moisture; then stir them well together, cast a Cloth over the Tub, and at the End of ten Days draw it out if it run clear, or stay longer; and to every Gallon of it put 3 Pounds of brown Sugar, dissolving the Sugar in some of the Liquor, and put it into a fresh Barrel, and stop it close; and at *Michaelmas* draw it into Bottles.
Note, If you will have your Wine red, put some red Gooseberries or red Currants to them, when you stamp them, and if you have not Berries enough, stamp Apples with them. Thus you may make Wine of other Berries, or Fruit, with little Trouble.

Currant Wine.—Pick a Pound of the best Currants and put them in a deep streit-mouthed earthen Pot, and
pour

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pour upon them about three Quarts of hot Water, having first dissolved therein three Spoonfuls of the purest and newest Ale Yeast; stop it close till it begins to work, then give it Vent as is necessary, and keep it warm for about three Days; it will work and ferment; taste it after two Days, to see if it be grown to your Liking; then let it run through a Strainer, to leave behind all the Currants and the Yeast, and bottle it up; it will be very pleasant, and is admirably good to cool the Liver and cleanse the Blood; it will be ready to drink in five or six Days after it is bottled, and you may drink it safely.

Strawberry Wine. — Bruise the Strawberries, and put them into a Linen-bag, which hath been a little dyed, that so the Liquor may run through more easily; hanging the Bag at the Bung in the Vessel. Before you put in your Strawberries, put in what Quantity of Fruit you think good to make the Wine of a high Colour; during the Working leave the Bung open, and when it has worked enough, stop your Vessel. Cherry Wine is made after the same Fashion; but then you must break the Stones.

Cherry Wine. — Take the Syrup of Cherries, and when it hath stood a while, bottle it up, and tie down the Cork, and in a short Time it will be pleasant Wine.

Black Cherry Wine. — Take a Gallon of the Juice of Black Cherries, keep it in a Vessel close stopped, till it begins to work, then filtre it; and an Ounce of Sugar being added to every Pint, and a Gallon of White Wine to the Whole; keep it stopped for Use.

To make a Jelly of Currants. — The Berries being mellow, put them with their Stalks, by Handfuls, into a Cloth, and strain out the Juice; boil the Juice with its Weight in Sugar to a right Thickness; skim it often.

To make Marmalade of Quinces. — Having pared, quartered, and coared them, put them into a Pot, and bake them with Town-Bread; then bruise them well, and boil them, with its Weight in Sugar, to a just Thickness. Good against Fluxes.

To preserve Cherries. — Take some of the worst Cherries, and boil them in fair Water, and when the Liquor is well coloured, strain it; then take some of the best Cherries you can get, with their Weight in beaten Sugar; then lay one Laying of Sugar and another of Cherries, till all are laid in the preserving Pan; then pour a little of the
Liquor

Liquor of the worst Cherries into it; boil your Cherries till they be well coloured; then take them up, and boil the Syrup till it will button on the Side of the Dish; and when they are cold, put them up in a Glass covered close with Paper, until you use them.

To candy Pears, Plums, Apricots, as clear as Amber.—Take your Apricots or Plums, and give every one a Cut to the Stone in the Notch; then cast Sugar on them, and bake them in an Oven, as hot as for Manchet, close stopped; let them stand Half an Hour; then lay them one by one upon Grasse-Plats, and so dry them. In this Manner you may candy any other Fruit.

To preserve green Walnuts.—Boil your Walnuts till the Water taste bitter, then take them off, and put them in cold Water, and peel off the Bark, and weigh as much Sugar as they weigh, and a little more Water than will wet the Sugar; set them on the Fire, and when they boil up take them off, and let them stand two Days; then boil them once more.

To preserve Currants.—Part them in the Tops, and lay a Laying of Currants, and a Laying of Sugar, and so boil them as fast as you do Raspberries; do not put them in the Spoon, but scum them; boil them till the Syrup be pretty thick; then take them off, and let them stand till they be cold, and put them in a Glass.

To preserve Damsons, red or black Plums.—Take the Weight in Sugar, and Water enough to make a Syrup to cover them, so boil them a little therein, being close covered, turning them for fear of spotting; let them stand all Night in their own Syrup, then set them upon a Pot of seething Water, and suffer your Plums to boil no faster than the Water under them; and when they are both sweet and tender, take them up, and boil the Syrup again till it is thick, then put up your Plums and it together in your preserving Glasses.

To preserve Gooseberries.—Take Gooseberries, or Grapes, or Barberries, and take somewhat more than their Weight in Sugar beaten fine; lay one Laying of Fruits, and another of Sugar, till all are laid in your preserving Pan; then take six Spoonfuls of fair Water, and boil your Fruit therein as fast as you can, until they be very clear; then take them up, and boil the Syrup by itself till it be thick: When they are cold, put them in Gally-pots.

To dry Cherries.—Take six Pounds of Cherries and stone them; then take a Pound of Sugar and wet it with the Juice of the Cherries; boil it a little, then put in your Cherries, and boil them till they are clear; let them lie in the Syrup a Week; then drain them from the Syrup, and lay them on thin Boards to dry; wash off the Clamminess with warm Water, and dry them a little longer.

To dry Pippins.—Take the fairest yellow Pippins, pare them, make a Hole through every one; then parboil them in a little fair Water, then take them up, and put them in as much clarified Sugar as will cover them; let them boil gently a little while in that Syrup, then take them out, and put them into an earthen Platter, and cast fine Sugar upon them, and set them in the Oven Half an Hour; then take them out, and cast some more Sugar on them, being turned, and so three Times, and they will be well dried.

To make Verjuice.—Gather your Crabs as soon as the Kernels turn black, and lay them a while in a Heap to sweat; then pick them from the Stalks, Blacks, and Rottenness; then crush and beat them all to Pieces in a Tub, then take a Bag or coarse Hair-cloth as big as your Press, and press it as long as any Moisture will drop out, having a clean Vessel underneath to receive the Liquor; then turn it up in sweet Hogheads. and to every Hoghead put six Handfuls of damask Rose Leaves; then bung it up, and use it as you have Occasion.

To preserve Barberries.—Take one Pound of Barberries picked from the Stalks, put them in a Pottle-Pot, and set it in a Brass-pot full of hot Water, and when they be stewed, strain them, and put to them a Pound and a Half of Sugar, and a Pint of red Rose-water, and boil them a little; then take half a Pound of the fairest Clusters of Barberries you can get, and drop them in the Syrup while it is boiled; then take the Barberries out, boil the Syrup while it is thick, and, when cold, put them in the Glasses with Syrup.

To make white Mead.—Take six Gallons of Water, and put in six Quarts of Honey, stirring it till the Honey be thoroughly melted; then set it over the Fire, and when it is ready to boil, scum it very clean, then put a Quarter of an Ounce of Mace, and as much Ginger, Half an Ounce of Nutmegs, sweet Marjoram, broad Thyme, and

Sweet-

Sweet-Briar, of all together an Handful, and boil them therein; then set it by till it be thoroughly cold, and then barrel it up, and keep it till it be ripe.

To make Jelly of Apples.—Take either Pippins or John-Apple, and cut them into Quarters, either pared, or unpared: boil them in a good Quantity of Water till it be very strong of the Apples; take out the clear Liquor, and put to it a sufficient Quantity of Sugar to make Jelly with the Slices of Apples; boil all together till the Apples be enough, and the Liquor like a Jelly; or else you may boil the Apple Slices in Liquor without Sugar, and make Jelly of the other Liquor, and put the Slices into it when they jelly; and, when it is sufficiently boiled, put to it some Juice of Lemon, and Amber, and Musk, if you will.

EXPERIENCED MEDICINES.

The following physical Marks are often used:

20 Grains	$\left. \begin{array}{c} \text{make} \\ \left\{ \begin{array}{l} \text{a Scruple} \\ \text{a Drachm} \\ \text{an Ounce} \\ \text{a Pound} \end{array} \right\} \right\}$	3	} thus marked.
3 Scruples		3	
8 Drachms		3	
12 Ounces		lb.	

Note, That a Decoction is boiling an Herb, &c. in Beer, or Water, thus marked, Dec.

Ague.—Being hot in Bed (an Hour before the Fit is expected) drink the Dec. of Camomile sweetened with Treacle, and sweat two Hours; or lay to the Wrists Soot.

Or take Salt of *Card. Benedict.* and Salt of Wormwood, of each 15 Grains, Tartar vitriolated half a Scruple; mix them, and give the Medicine in a few Spoonfuls of *Rhenish* Wine, or some other convenient Vehicle, either before the Fit, or when the Stomach is empty.

To cure a Tertian Ague.—Take Crude Allum and Nutmeg finely scraped, of each about half a Drachm; mix the Powder well together, and add about six Grains of Saffron: Give this in two or three Spoonfuls of White Wine just before the Fit.

Fever.—Drink the Dec. of Camomile, and sweat in Bed divers Mornings; and the Dec. or Tea of *Carduus* to vomit; afterwards take a Purge.

St. Anthony's Fire.—Take a Purge, and anoint with the Marrow of a Leg of Mutton, or Oil of Wheat.

Bruises outward.—Apply green Wormwood, and Hyssop, beaten to a Plaister.

360 *The YOUNG MAN's Companion.*

Bound in the Body, or Costiveness.—Take often an Ounce of Cream of Tartar mixed with Honey.

Bleeding at the Nose.—Stuff into your Nostrils Rabbit-Wool rolled in Bole Ammoniac, and chew Perriwinkles in the Mouth.

Bellies swelled in Children.—Apply fried Wormwood with fresh Butter, fresh for three Nights.

Blood to Purge.—Drink often the Tea of Centaury, or Ground-Ivy, or Sassafras Chips.

Asthma, or Shortness of Breath.—Take of Turmeric, Liquorice, Brimstone, and Elecampane Root, of each two Penny-worths; mix them with Honey, and take some Morning and Night.

Consumption.—Take six Tar Pills, and drink after them Syrup of Sanicle, or Hoar-hound. Or, Take one Gallon of Spring-Water, a Quart of Sack, and two Calves' Hearts sliced thin, one Hundred of fresh Red Roses, and a good Handful of Hoar-hound; bake these in a Pot with the largest Sort of Town-Bread. Take six Spoonfuls of it often.

Chops in the Hands.—Wash them with your own Uline, and dry it in by the Fire.

Chops in the Nipples, or Lips.—Apply to them Raisins roasted before the Fire.

Kibed Heels.—Soak them often in Water with Allum boiled in it.

Convulsion Fits—Put the Powder of both Sorts, or either of the Roots of Piony in all your Drink; the Juice of Rue is also very good.

Weak Digestion.—Drink Dec. of Centaury, but no spirituous Liquors.

Dropsy.—Turn into all your constant Drink Agrimony, Pellitory of the Wall, Dog-grass Roots, and the inner Peeling of the Boughs of Ash and Alder, which powerfully provoke Urine.

Gout, or Rheumatism.—Take a Quarter of an Ounce of Rhubarb, as a Purge, every six Weeks; live on the plainest Diet, and drink no strong Liquors.

Drafness—If the Wax in the Ear be hard, let Oil of bitter Almonds be dropped therein, and a Week after let it be syringed with warm Water; but if the Wax in the Ear be very thin, put in a Tent dipped in Melilot, and take sneezing Powder often when warm in Bed.

Fulx.

Flux.—Take a Spoonful of the Powder of Cinnamon, Half the Quantity of beaten Acorns and their Cups, with some Loaf Sugar; mix them together, and take the Whole Half an Hour before Dinner; Or boil an Ounce and an Half of whole Cinnamon, and a Quarter of a Pound of Loaf Sugar, in a Pint of Milk and a Quart of fair Water, Half an Hour; drink the Liquor all in a Day: It is an excellent Cordial.

Feet Galled, or to prevent their Galling.—Rub them with common Soap. *If Galled*—Lay on a Plaster of *Diachylon cum Gummi.* *If an hard Bunch on the Foot.*—Let the same continue on for some Months. *If they itch much in Winter,* bathe them with the Water wherein a good Quantity of Allum is boiled; do so to kided or swelled Hands in the Winter, or that sweat too much in Summer: But for Chilblains on Hands or Feet, the Skin being off, one *Plaister of Burgundy Pitch* cures; which some foolish People are afraid to use, because it draws.

Gripping in the Guts.—Take a Quartern of Brandy, slice a small Nutmeg into it, burn it a little over the Fire; then having beaten the Yolk of an Egg with Water and Sugar, put it to the other, whilst it is over the Fire; stir it to thicken a little; drink it going to bed: it is a Cordial, and excellent against Cholic Pains.

Gum sore.—Hold Allum in your Mouth often, if you cannot chew Tobacco: For a Child use Honey of Roses, or Honey and Allum mixed together.

Heart-Burn.—Take a Spoonful of Chalk, and wash it down with skim Milk.

Itch.—One Pound of new Lime steeped 24 Hours in a Gallon of Spring-Water, pour the Clear into a Kettle, and set a Pot with two Ounces of Quicksilver in it, to boil Half an Hour: Wet all the itching Places therewith; but a private Itching Place, wet it every Morning with salting Spittle and take a Purge.

King's Evil.—Take Liquorice, sweet Fennel-Seeds, and Aniseeds, of each two Ounces beaten, white Nettles and their Roots, of each an Handful; boil all these in a Gallon of Spring-Water till Half is wasted, strain it, and when it is well settled, pour off the Clear into a Bottle; put to it Honey of Roses two Ounces, Syrup of Violets, and brown Sugar Candy, of each one Ounce; stir them all together, and shake it well every Time you use it: Drink some of it often upon an empty Stomach, for three Months

or more; to a Child of two, or three, or four Years old, or four Spoonfuls fasting an Hour after.

Melancholy — Eat often of Cream of Tartar mixed with Honey or Treacle.

Piles. — Drink often of the Tea of Yarrow, eat mostly Bread and Butter, sit over the Fume of Olibanum, Myrrh, and Frankincense.

Poison newly taken. — Drink Sallad Oil mixed with Cream of Tartar.

A Purge safe for all. — Take Cream of Tartar one Ounce, Jalap and Brin stone of each a Quarter of an Ounce, let the Jalap first be beaten into fine Powder, before you beat them together, that they may be well mixed in a Mortar; but if you are hard to work upon it, put of Jalap two Drachms more.

Poultice. — Boil white Bread Crums in Spring-Water to a right Thickness, then stir into it a little Butter or Oil; apply it new made, twice a Day, to Sores, Pains, Strains, Boils, &c.

Melilot Plaister made in June. — Take Melilot, Pimpernel, and Scabious, of each two Handfuls; beat them small in a Mortar, and add two Pounds of dried Hog's Seam; let it stand in the hot Sun-shine seven or eight Days; then melt it and strain it well, and add as many more fresh Herbs, and set it in the Sun as before; and melt and strain it again; then boil it till the Juice is consumed; take it off the Fire, and put to it beaten Resin, Bees-Wax, and Venice Turpentine, of each one Ounce; keep it in a Pot, or in Rolls, for Use.

For hollow Ulcers. — Melt some Melilot, and dip a Tent made of Linnen, or Tow, according to the Hollowness of the Ulcers, first rolling the Tent in burned Alum, as you see Cause; remembering to make the Tent less and less, as the Fistula lessens, and lay a Plaister on the same; and if the Sore be in the Leg, lay all over a large Paper, spread with Nutritum, to repel the Humours: And if your Body be foul, take the above Purge; always remember to purge well after you be cured of any Distemper.

Small-Pox. — Being warm in Bed, drink mulled Ale with Marigold Flowers, and sweat a little to bring out the Pox, and keep them up; take Brimstone and Treacle. *In a sickly Time* — Drink the Tea of Rue before you go abroad.

Rickets. — Boil six House-Snails with their Shells in a Pint of new Milk, till one Half is wasted; give the Milk

A List of the FIXED FAIRS. &c. 363

to the Child for Breakfast, and, at Four in the Afternoon, mince the Snails, and heat them, and let them eat it as other Meat; then anoint his Joints with the Oil that follows, *viz.* Bake black Snails and Camomile with Town-Bread, and the Oil will swim at the Top.

Running of Reins. — Take fine Bole, sealed Earth, and Dragon's Blood, of each one Ounce, Conserve of Roses three Ounces, mixed, and take the Quantity of a Nutmeg first and last. Drink no strong Drink, nor eat sugared Meats.

Spleen. — Fill a Glass Bottle with the small Twigs of Tamarinds, then, with white Wine; drink some at Morning.

Swelling that comes suddenly. — Boil Smallage, Mallows, and Camomile, in Milk and Water, till they are tender; moisten it with a little Butter; renew it twice a Day, or apply the Poultrice already described.

AN EXACT LIST of all the FIXED FAIRS

IN

ENGLAND and WALES,

According to the Order of the Days on which they are held throughout the Year.

Note, The Figures on the Left Hand denote the Days of the respective Months.

The contracted Words placed after the Towns, &c. denote the several Counties where such Places are.

The Market-Towns, as they first occur, are distinguished by the initial Letters of the Days of the Week on which their Markets are held; where M stands for Monday, T for Tuesday, W for Wednesday, Th for Thursday, F for Friday, and S for Saturday.

The Cities are distinguished by being put in Capitals.

The true alphabetical Order, as far as it goes, is observed under each Day.

JANUARY.

- 1 CHARLBURY, Oxf.
- 1 Droitwich, Worc.
- Hornby, Lanc.
- Laycock, Wilts
- Pentryn, Cornw.
- Saltwich, Worc.
- Landiliovawr, Carm.
- 9 CANTERBURY, Kent
- Cockhill, Somers.
- Royfton, Heref.
- SALISBURY, Wilts
- 4 Llanibethew
- 6 Hickford, Lanc.

- 17 SALISBURY, Wilts, T S
- Tavistock, Dev. S
- 18 Langinny, Monm.
- 24 Derby, W F S
- 29 Grampound, Corn. S

FEBRUARY

- 3 BATH, Somers. W S
- 4 Barkston, Yorksh.
- 5 Bodmin, Cornw. S.
- BRISTOL, Somers. W Th
- Churchingford, Dev.
- Gravesend, Kent, W S
- North Allerton, Yorksh. W
- Rickbury Landyfel

- 11 Landysfel
 12 Fromely, Lanc.
 13 Armington, Dev.
 Ashbourn, Derb. S.
 Beaconsfield, Bucks, Th
 Bicklesthworth, Bucks,
 Bridgenorth, Shropf.
 Bromley, Kent, Th
 Bromley, Staff. T
 Bugworth, Chef.
 Cray, Kent, W
 Devizes, Wilts, Th
 Dorchester, S.
 East-Lowe, Cornw. S
 Evesham, Worc. M.
 Farrington, Berks, T
 Godalmin, Surry, S
 Hambleton, Hampf.
 Hindon, Wilts, Th
 Leominster, Heref. F
 Liston, Dev. S.
 Lime, Dorsetf. F.
 Lynn, Norfolk, Th S
 Maidstone, Kent, Th
 Malton, Yorkf. S
 Reading, Berks, S
 Saltash, Cornw. S
 14 Axbridge, Somersf. Th
 Blaise, Cornw.
 Broxgrove
 Frampton on Severn, Th
 BATH, Somersf. W S
 19 Tregaron, Card. Th
 20 Landaff, Glam.
 24 Frome, Somersf. W
 25 Ashbittel, Somersf.
 Feverham, Kent, W S
 Oulney, Bucks, M
 Plympton, Dev. S

MARCH

- 4 Chipping Norton, Oxf. W
 5 Baldock, Hertf. Th.
 6 Blandford, Dorsetf. S
 Bourne, Linc. S
 Corsham, Wilts
 Henley upon Thames, Oxf. Th
 Higham-Ferris, Northamp, S
 East-Illey, Berks, W
 Tewksbury, Glouc. W S
 Uppingham, Rutl. W
 Walden, Essex, S
 Whitland
 8 Stafford, S
 10 Chesterfield, Derb. S

- 12 Culliford, Dev.
 Langevellen, Glam.
 Madrim
 13 Langadock, Carm. Th
 14 Brimwelbracks, Norfolk
 Sevenoke, Kent, S
 15 Bedford, T S
 Oakham, Rutl. S.
 16 Penzance, Cornw. Th
 17 Harif
 18 Workfop, Nottingh. W
 19 Tregaron, Card.
 21 Downes, Dev.
 23 Alesham, Norfolk, S
 Bodmin, Cornw.
 Stockport, Chef. S.
 Sudbury, Suff. S
 Wrexham, Denb. M Th
 Woburn, Bedf. F
 24 Bedwin, Wilts
 Mountbowin, Cornw.
 Wye, Kent, Th
 28 Bakewell, Derb. M
 Malmsbury, Wilts, S.
 Patriington, Yorkf.
 29 Stourbridge, Worc. S
 30 Cobham, Surry
 31 Alesbury, Bucks, S
 DURHAM, S.
 Newbridge, Oxf.
 Northmore

APRIL

- 2 Tocester, Northamp. T
 4 Grimson, Monm.
 Lanerchemith
 Northfleet, Kent
 5 Ashwell, Hertf.
 Axbridge, Somersf.
 Bishop's-Lidiard, Somersf.
 Bridport, Dorsetf. S
 Caerfilly, Glam. Th.
 Cardigan, S
 Chagford, Dev.
 Clack, Wilts
 Croscumb, Somersf.
 GLOUCESTER, W S
 Great Chart, Glouc.
 Huntingdon, S
 Lamberhurst, Kent
 Maldon, Essex, S
 Molpas, Chef. M
 Midhurst, Suffex, Th
 Montgomery, Th

- 5 Newcastle upon Tyne, T S
- Northampton, W F S
- Northhill
- Oulney, Bucks
- Plympton, Dev.
- Probus, Cornw.
- Sea-faltre, Kent
- Southwick, Hampf.
- St. Alban's, Hertf. W S
- St. John's, Worc.
- Tarring
- Wadley Berks,
- Walden, Essex
- Watlington, Oxf. S
- Wickware, Glouc. M
- Wigburn
- Wigmore, Monm.
- Woodstock, Oxf. T
- 7 Atherston, Warw. T.
- Derby
- 9 Whitland
- 13 Epping, Essex, Th F
- Hitchin, Hertf. T
- Leek, Staff. W
- Northfleet, Kent
- Rochford, Essex, Th
- 15 Bewley, Hampf.
- 16 Wareham, Dorsetf.
- 18 Clare, Suff.
- Derby
- 19 Fenny-Stratford, Bucks
- 20 Billingsworth
- Cobham, Surry
- 21 Sheepwash, Dev.
- 22 Aberforth, Yorkf. W
- Pontipole, Monm. S
- Warminster, Wilts, S
- 23 Downton, Wilts, F
- 24 Earleton, Hertf.
- Englesfield, Suffex
- Orleton, Westm.
- 25 Acton, Glouc.
- 26 Kettering, Northamp.
- 27 East Grinstead, Suffex, Th.
- Holdzary, Dev.
- 28 Malmesbury, Wilts
- 30 Bilborough, Nottingham.
- Bruton, Somersf. S
- Gainborough, Linc. T
- St. Ives, Cornw. W S
- M A Y*
- 1 Kellington, Cornw. S
- Kenning, Northamp.
- Stonehouse, Glouc.

- 2 Newport-Pagnel, Bucks, S
- Redruth, Cornw.
- 3 Stafford
- Westram, Kent, W
- 4 Ampthill, Bedf. Th
- Arden, Norfolk
- Beely, Glouc.
- Bewdley, Worc. S
- Bilson
- Bridstock
- Bury, Lanc. Th
- Castlecomb, Wilts
- Chagford, Dev.
- Charing, Kent
- Chedder, Somersf.
- CHICHESTER, Suffex, W
- Cliff, Northamp. T
- Cowbridge, Giam. T
- Frampton, Dorsetf.
- Gosport, Hants
- Gravesend, Kent
- Great Torrington, Dev. S
- Guilford, Surry, S
- Haly, Berks
- Harbin, Norfolk
- Harlow-bush, Hertf.
- Hemingham, Essex
- Hilborough
- Ipswich, Suff. W F S
- Kirton, Linc. S
- Longner
- Luton, Bedf. M
- Manhemot, Cornw.
- Modbury, Dev. Th
- Northampton
- Nutley, Suffex
- Overton, Hampf.
- Sapsan, Hertf.
- Sawbridgeworth, Hertf.
- Spasfer, Hertf.
- St. Pombs, Cornw.
- Tamworth, Staff. S
- Wilton, Wilts, W.
- Wortham, Kent, T
- 6 Wotton-Basset, Wilts, Th
- Abingdon, Berks, M F
- Axminster, Dev. S
- Axmouthe, Dev.
- Bourn, Linc.
- Bradnidge, Dev.
- Bracknel, Berks
- Buckingham, S
- Calne, Wilts, T

- 6 Chaly, Dev.
 Chipping-Norton, Oxf.
 Cliffe, Suffex
 Colebrook, Bucks, T.
 Dunmow, Essex, S
 Dursley, Glouc. Th
 Halded, Essex, S
 Ivingo, Bucks, F
 Maidenbradly, Wilts
 Mountcut, Somers.
 Pensford, Somers. T
 Southampton, T Th S
 Stalbridge, Dorsetf.
 Stockunderham, Somers.
 Stokegomer, Somers.
 Swaley
 Tangley, Hampf.
 Tavistock, Dev.
 Tenbury, Worc. T
 Tregahethaw, Cornw.
 Tregony, Cornw. S
 Uttoxeter, Staff. W
 Wallingford, Berks, T S
 West-Lowe, Cornw.
 Wincheomb. Glouc. S
 7 Aldborough, Suff. S
 Tenterden, Kent, F
 8 Bosworth, Leic. W
 Churchingford, Dev.
 Okeham, Rutl.
 Philipsnorton, Somers.
 9 Soham, Camb.
 10 Beverley, Yorkf. W S
 Kerton, Dev.
 Stare, Middl. F
 12 Andover, Hampf.
 Blackburn, Lanc. M
 Blackheath, Kent
 Blackney, Glouc.
 Brickhill, Bucks
 Caerlion, Monm. Th
 Castell-Cary, Somers. S
 Chelmsford, Essex, F
 Columpton, Dev. S
 Congleton, Ches. S
 Corfe-Castle, Dorsetf. S
 Crickhowel, Breckn. Th
 Endfield, Middl. S
 Evershot, Dorsetf. Th
 Ewel, Surry
 Folkingham, Linc. Th
 Fowey, Cornw. S
 Hanny, Essex
 Harwich, Essex, T
 12 Haveril, Essex, W
 Hertford, S
 Kitmar
 Lamborn, Berks, F.
 Lanttrissent, Glam.
 Leicester, W F S
 Leighton, Bedf. T.
 Lexfield, Suffolk
 Liddbury, Heref. T
 Limington, Hampf. S
 LITCHFIELD, Staff. T F
 Lowth, Linc. W S
 Lynfield, Suffolk
 Maidstone, Kent
 Milbrook, Cornw.
 North Peckerton
 Oswestry, Shropf. M
 Pembridge, Somers. T
 Penryn, Cornw. W F S
 Philipsnorton, Somers.
 Rowland's Castle, Hants
 Sherton, Wilts
 Stanstead, Hertf.
 Stocknail
 Stow in the Wold, Glouc. Th
 Stratford on Avon, Th
 Stroud Water, Glouc. F
 St. Stephen, Cornw.
 Sturminster, Dorsetf. Th
 Thetford, Norf. S
 Totness, Dev. S
 Tuxford in the Clay, M
 Usk, Monm. F
 Warbridge, Cornw.
 Warwick, S
 Wendover, Bucks, Th
 13 Wiscomb, Somers.
 Bramyard, Heref. M.
 Chapel-Heath, Glam.
 Graies, Essex, Th
 Lemster, Heref.
 Lime, Dorsetf.
 Reading, Berks
 Wirksworth, Derb. T
 14 Abergavenny, Monm. T
 Arundel, Suffex, W S
 Ashborn-Peak, Derb.
 Backington, Dev.
 Bala, Merion, S
 Berkley, Glouc. W
 Brent, Dev. S
 Broadcliff, Dev.
 Bromsgrove, Worc. T
 14 Chard,

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- 14 Chard, Somers. M
Chertsey, Surry, W
Church-Stretton, Shropf. Th
Clifton, Bedf.
Cowbridge, Glam.
Crouch, Eff x
Denbigh, W
Derris, Glouc.
Elstow, Bedf.
Hemingham, Essex
Heytsbury, Wilts
High Beckington, Dev.
Holway, Somers.
Huthersfield, Yorkf.
Machynleth, Montg. M
Meethyr
Mounon
Nuncaton, Warw. S
Oakhampton, Dev. S
OXFORD, WS
Pulhely, Carn. W
Radfsdale, Lanc.
Ramsbury, Wilts
Stafford
Stowguffy, Somers.
Tewksbury, Glouc.
Tiddefield, Derb. W
Tichfield, Hamf. f.
Tregony, Cornw.
Waltham Abbey, Essex, T
Witheridge, D. v.
Woodbridge, Suff. W
Woolbridge, Dorsetf.
15 Beverley, Yorkf.
Chapel in Frith, Derb.
Chatham, Kent
Chesterfield, Derb.
Hay, Beckn. S.
Rippon, Yorkf. Th
Rowland Castle, Berks
16 Ashford, Kent, S
17 Amesbury, Wilts
Chippingham, Wilts
Knighton, Radn. Th
18 More, Wilts
BATH, Somers.
Hanslop, Bucks
Newton Lanc.
19 Thunderly
Stratton, Cornw. T
Tockington, Glouc.
Wernerly, Cornw.
Wickham, Hampf.
20 Combstock, Dev.

- 21 Fringe, Norfolk
Hatherley, Dev. F.
St. Tiddy
22 Appletham, Hampf.
Dunstable, Bedf. W
Greenstreet
23 Bagborough, Somers.
Thorock Graies, Essex
YORK, T Th FS
24 Albrighton, Shropf.
Ba'e
Brickwell
Merin
25 Dagenham, Essex
Fordsham, Essex
26 Camelford, Cornw. F
Langaranny, Card.
Welstpole, Montg. M.
29 Tallowdown, Dorsetf.
30 **HEREFORD, W F S**
Mayfield
Odehill
ROCHESTER, Kent, W F
Steyning, Suffex, W F
WELLS, Somers. WS
JUNE.
2 Dorchester
5 Somerton, Somers. M
Malmsbury, Wilts
6 Lenham, Kent, T
7 Montgomery
8 St. Germans, Cornw.
9 Cranbrook, Kent, S
10 Pershore, Worc. T
12 Chapel, Derb.
14 Alesbury, Bucks
15 Ryton, Somers.
16 Milborne Port, Somers.
17 Milton, Kent, S
18 Workfen
20 Abingdon, Berks
Maidstone, Kent
21 Highbeach, Essex
22 Amesbury, Wilts
Appledore, Kent
Axbridge, Somers.
Boroughbridge, Yorkf. S
Bremel, Norf.
Chippenham, Wilts
Chudleigh, Dev. S
Grampound, Cornw.
Hatherly, Dev.
Holt, Norf. S

R 4

22 Kinwilgate,

- 22 Kinwilgate, Carm.
Landilovawr, Carm. T S
Llanibihew
Lanwitt
Lidury, Heref.
Macclesfield, Chef. M
Market-Jew, Cornw. Th.
Newborough, Angl. T
Newcastle in Emlin
Newtham, Glouc. F
Newport-Pagnel, Bucks
Oak nham, Berks, T
Porlock, Somers.
Se by, Yorks. M
Shipston upon Stower, F
Stavord, Somers.
Stockland, Dorsetf.
Swansey, Glam. W S
Tewksbury, Glouc.
Warbridge, Cornw.
Wellington, Shropf.
23 Manhemct, Cornw.
Portefract, Yorks. S
24 Newtown, Montg. T
25 Bangor, Carn. W
26 Pershore, Worc.
27 Built, Breckn. M S
Melcomb-Regis, Dorsetf. T F
Newport-Keams
28 Caerwigs, T
Haddstock
Hallaton, Leic. Th
Higham-Ferris, Northampt.
Lanvilling Montg. Th
Molfon, Hampf.
Prescot, Lanc. T
Queen's Cammel, Somers.
Taunton, Somers. W S
Yeovil, Somers. F
29 BATH, Somers.
30 Bridgenorth, Shropf.
Cowyard, Glouc.
Fairford, Glouc. Th
Hith, Kent, S
Y U L Y
HEREFORD
2 Coln, Lanc. W
Yfradmerick
3 Cereham, Norf. F
Downham, Norf. S
Northleech, Glouc. W
Shrewsbury, Shropf. W Th S
St. Alban's, Hertf.
4 Armington, Dev.

- Castle Ebcihen
5 Alresford, Hampf. Th
Awkingborough, Linc.
Axminster, Dev.
Barnet, Hertf. M
Barnwel, Camb.
Bedal, Yorks. T
Bedford
Beverley, Yorks.
Billington, Kent
Bishop's Castle, Shropf. F
Bosworth, Leic.
Broughton-Green, Northamp.
Bradfield, Essex, Th
Brecknock, W S
Bridgewater, Somers. Th
Blomsgrove, Worc.
Burford, Oxf. S
CHESTER, W S
Colchester, Essex, S
Cowbridge, Glam.
Cranbrook, Kent
Croydon, Surry, S
Derby
Devizes, Wilts
Dorchester
Earling, Hampf.
Farnham, Surry, Th
GLOUCESTER
Halifax, Yorks. Th.
Hartstone, Norf.
Hertford
Horsham, Suffex, S
Hurst
Kirkham, Lanc. T
Knotford, Chef. S
Kyneton, Warw. T
Lancaster, S
Launceston, Cornw. S
Leicester
LINCOLN, F
Ludlow, Shropf. M
Newbury, Berks, Th
Newton-Bushel, Dev.
Orford, Suff. M
Pembey
PETERBOROUGH
Northampton, S
Plint, Cornw.
Plympton, Dev.
Pontipole, Monm. S
Preston, Lanc. W F S
Probus, Cornw.
Reading, Berks

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5 Rumford, Essex, T W
 Silverton, Dev.
 Shaftsbury, Dorsetf. S
 Sodbury, Glouc. Th.
 St. Ann's
 Stritstock
 South-Petherton, Somers. Th
 Tangle, Hampf.
 Torrington, Dev.
 Ulpho
 Tunbridge, Kent, F
 Wakefield, Yorkf. Th F
 Wallingford, Berks
 Wareham, Dorsetf.
 Warminster, Wilts, S
 Warwick
 Wenlock, Shropf. M
 Windfor, Berks, S
 Winterton
 Wolverhampton, Staff. W
 Woodhurst, Hunt.
 6 Bungey, Suff. Th.
 7 Buckingham
 Northop
 Burton upon Trent, Th
 8 Folkeston, Kent, Th
 Lanegarn, Angl.
 Machynleth, Montg.
 9 Reyston, Hertf. W
 St. Bala, Merion.
 St. Pombs, Cornw.
 10 Abbotsbury, Dorsetf. Th
 Ashwell, Hertf.
 Aylsford, Dorsetf.
 Berington, Hertf.
 Berkhamstead, Hertf. M
 Bibalance
 Blandford, Dorsetf.
 Bolton, Lanc. M
 Bookford, Dev.
 Bromley
 Cardiffe, Glam. W S
 Camborn, Cornw.
 Charmouth, Dorsetf.
 Dulverton, Somers. S
 Fareham, Hampf. Th
 Gorgan, Lanc.
 Grantham
 Hadderfield, Suffex
 Hartlerow, Berks
 Hodsdon, Hertf. Th
 Holdworth
 Holdzary, Dev.

10 Hooksnorton, Oxf.
 Hordon, Essex
 Huntsfield, Somers.
 Iver, Bucks
 Lanmorgan
 Langport, Somers. S
 Larick, Cornw.
 Lemster, Heref.
 Leftwithiel, Cornw. F.
 Lower Knotsfor^l, Chef.
 Mansfield, Nottingh. Th.
 Marlborough, Wilts, S
 Mountforrel, Leic. M
 Oulney, Bucks
 Petersfield, Hampf. W
 Pont-Stephen
 Portsmouth, Hampf. Th S
 Radnage, Bucks
 Ringwood, Hampf. S
 Sevenoke, Kent
 South, Warw. M Th
 Stafford
 Starstrange, Suff.
 Stebbing, Essex
 Stockbridge, Hampf.
 Stockworth, Linc.
 Stoken Church, Oxf.
 Stow, Suff. Th
 Sudbury, Suff.
 Thorock Graies, Essex
 Tring, Hertf. F
 Upton on Severn, Th
 Upcomb, Dev.
 Wem, Shropf. Th
 Winbourn, Dorsetf. F
 Winterborn, Glouc.
 YORK
 12 Witney, Oxf. Th
 Carshalton, Surry
 Congleton, Chef.
 14 Ashton under Line, Lanc.
 Huntingdon
 Ickleton, Camb.
 Neath, Glam. S
 Rickmansworth, Hertf. S
 Smeath, Kent
 Swansey, Glam.
 Wem, Shropf.
 Wickware, Glouc. M
 Wooburn, Bedf.
 Woodstock, Oxf.
 4 Hadderston
 5 Chesterfield, Derb.
 R 5

16 Bulton

- 16 Burton upon Trent
Woodland, Dorsetsh.
- 17 Audley End
Haveril, Essex
Lanibithew
Lanidos, Montg. S
- 18 Albrighton, Shropf.
Amfworth, Hampf.
Brentwood, Essex Th
Camelford, Cornw.
Carington
Castlemain
Castle-Town, Heref.
Chapel in Frith, Derb.
Chippingnorton, Oxf.
Cirencester, Glouc. M
Denbigh
Emlin
Haverfordwest, Pemb. T S
Horsham, Suffex
Laycock, Wilts
Newport, Shropf. S
Odiam, Hampf.
Okehampton, Dev.
Overton, Hampf.
Pearyn, Cornw.
Richmond, Yorkf. S
Royston, Hertf.
Shefford, Bedf. F
Sherborn, Dorsetf. Th S
Southbovey, Dev.
Stockton, Durham, S
Sweaton
Taunton, Somersf.
Tenbury, Worc.
Threshemick
Uppingham, Rutl.
Wantage, Berks, S
Weald
Whatley, Somersf.
- 20 Helston, Cornw. S
Ingatston, Essex
- 21 Foolness
- 22 Lid, Kent
- 24 Fairnhay
- 26 Chiswick, Middl.
Culliford, Dev.
Grimstead, Suffex
Pinckback
Po chdown, Hampf.
Sherborn, Dorsetf.
Twisford, Berks
- 27 Everhot, Dorsetf.
Heaton, Yorkf. S

- 27 Milson, Wilts
- 18 Built, Breckn.
Knelds
Lanvilling, Montg.
Leek, Staff.
Stevenedge, Hertf. F
Winchcomb, Glouc. S
- 30 Carefully, Glam.
Linton, Camb. Th
- 31 Alfreton, Derb. M
Barkway, Hertf. S
Barton, Linc. M
Bartonstracy, Hampf.
Betley, Staff. T
Bolton, Lanc.
Bowling
Caerlion, Monm.
Catesby
Chilmark, Wilts
Chimmock
Cowling
Kingsbridge, Dev.
Malden, Essex
Marlborough, Wilts
Moreton, Dev. S
Norton, Wilts
Pocklington, Yorkf. S
Rofs, Heref. Th
St. Margaret's, Kent
St. Stephen, Cornw.
Summerton, Somersf.
Tenby, Pemb. W S
Uxbridge, Middl. Th

AUGUST

- 1 Bricklesworth, Bucks
Billericay, Essex, T
Bridgenorth, Shropf.
Broughton
Calne, Wilts
Clethero, Lanc. S
- EXETER, Dev. W F
- 2 Morpeth, Northumb. W
Arlington, Dorsetf.
Auburn, Wilts, T
Barnard-Castle, Northumb. W
Battlefield, Shropf.
Broughton in Furnace
Chimleigh, Dev. Th
Colchester, Essex
Cromas, Oxf.
Dartford, Kent, S
Goldzinny
Goudhurst, Kent, W
Honiton, Dev.

2 Ilchester, Somers.
 Kefwick, Cumb. S
 Kidwelly, Carm. T
 Kimbolton, Hunt. F
 Kingston, Surry, S
 Kingston, Heref. W
 Landridge, Somers.
 Liverpool, Lanc. S
 Longford, Devon.
 Lowth, Linc.
 Lugershal, Wilts
 Lympham, Somers.
 Maidenhead, Berks, W
 Maudlin-hill, Yorksh.
 Maudlin-hill, Hampsh.
 Newark, Nottingh. W
 Northwich, Chesh. F
 Ponterloy
 Rocking, Kent
 Stocksbury
 Stony-Stratford, Bucks, S
 Tetbury, Glouc. W
 Wedmore, Somers.
WINCHESTER, Hampf. W S
 Witheral, Yorkf.
 Yadeland
 Ya mouth, Hampsh.
 Yarum, Yorksh. Th
 3 Caernarvon, S
 Cheston
 Daventry, Northampt. W
 Redruth, Cornw.
 4 Wefno, Essex
 5 Abingdon, Berks
 Aldergain
 Altrincham, Chesh. T
 Ashweil, Hertf.
 Baldock, Hertf.
 Berkhamstead, Hertf.
 Bicester, Oxf. F
 Bilson
 Billflower
 Bos-castle, Cornw.
 Boston, Linc. W S
 Bridgtown, Devon.
 Broadoak
 Bromley, Kent
 Bromely, Staff.
 Bromsgrove, Worc.
 Buntingford, Hertf.
 Campden, Glouc. W
 Casden
 Castle-Town, Heref.
 Chard

5 Catsbotham
 Cheltenham, Glouc. Th
 Cholholm
 Derby
 Doncaster, Yorksh. S
 Dorchester
 Dover, Kent, W S
 Dudley, Worc. S
 Epsom, Surry
 Erith, Kent
 Garret, Surry
 Hatfield, Essex, S
 Hatfield, Hertf. Th
 Hemminham, Essex,
 Holthil, Dorsetsh.
 Janbarwick, Wilts
 Ipswich, Suff.
 Kingston, Berks
 Kingston Lisle
 Landervigan
 Machynleth, Montg.
 Malmsbury, Wilts
 Malpas, Chesh.
 Milve-ton, Somers.
 Ravinglafs, Cumb. S
 Reading, Berks
 Saltafh, Cornw.
 Seale, Glouc.
 Shefnal, Shropsh. F
 Shirking, Middl.
 Stackpool
 Stamford, Linc. M F
 Staverdale in the Wood, Devon.
 St. James's Ipswich
 Stone, Staff. T
 Themble Green
 Thickham
 Thrapfton, Northampt. T
 Tilbury, Essex
 Tregony, Cornw.
 Trowbridge, Wilts, S
 Walden, Essex, S
 Warrington, Lanc. W.
 Wigmore, Monm.
 6 Bewdley, Worc.
 Paddington, Middl.
 Rhaiaidergwy, Radn. W
 Tanhil, Wilts
 Teptery, Essex
 Falmouth, Cornw. Th
 8 Fairfax
 Farsut
 Howey

- | | | | |
|----|--------------------------|----|---------------------------|
| 9 | Manhemor, Cornw. | 15 | Tocester, Northampt. |
| 10 | Pontipole, Monm. | | WORCESTER, W F S |
| | YORK | 17 | Bardney |
| 11 | Stafford | 20 | Abelew |
| 12 | Banbury, Oxf. Th | 21 | Alchurch, Wore. |
| | Bishops Waltham, Hampsh. | | Alton, Hampsh. S |
| | Bridford | | Ashborn, Devonsh. |
| | Burford, Wilts | | Bampton, Devonsh. S |
| | Caerfily | | Blackmore, Essex |
| | Caermarthen, W S | | Bodmin, Cornw. |
| | Chepstow, Monm. S | | Brentford, Middl. T |
| | Dunstable, Bees. | | Chorleigh |
| | Earlton, Herts. | | Chusleigh, Devonsh. |
| | Feverham, Kent | | Crowleigh, Lanc. |
| | Flint | | Deddington, Oxf. |
| | St. Germans, Cornw. | | Different, Glamo. |
| | Green | | Differing Oliwick |
| | Grifman, Monm. | | Dinton, Oxf. |
| | Hammock, Devonsh. | | Doncaster, Yorksh. |
| | Hampstead, Middl. | | Farnham, Dorsetsh. |
| | Hay, Breckn. | | Foresham |
| | Highworth, Wilts, W | | Frodesham, Chesht. |
| | Hornsea, Yorksh. | | Fulsea |
| | Iver, Bucks | | Harleigh |
| | Lantriffent, Glamo. | | Hawkhurst |
| | Larwin | | Hilmerton, Wilts |
| | Lidford, Somers. | | Horncastle, Linc. S |
| | Loughborough, Leic. Th | | Hungerford, Berks, W |
| | Malling, Kent, S | | Kellow |
| | Markham Church, Cornw. | | Kenwilgal |
| | Mitcham, Surry | | Kilgarren, Pemb. W |
| | Newcastle-under-Line, M | | Kirton, Devonsh. |
| | Newent, Glouc. F | | Lansdown, Somers. |
| | Newton, Lanc. | | St. Lawrence, Cornw. |
| | Northam-Church | | Lawrence Liddard, Somers. |
| | North-Curry, Somers. | | Lechlade, Glouc. T |
| | PETERBOROUGH, North. | | Madbury, Devonsh. |
| | Plympton, Devonsh. | | Melton Mowbray, Leic. T |
| | Rumney, Kent, Th | | Marras |
| | Selby, Yorksh. | | Marrock, Somers. |
| | Shrewsbury, Shropsh. | | Newborough |
| | Stoke-Gomer, Somers. | | Quiney, Bucks |
| | Thaxted, Essex, F | | Peckham, Surry |
| | Treganethaw, Cornw. | | Peddy, Somers. |
| | Warbridge, Cornw. | | Rugby, Warw. S |
| | Wisbich, Camb. S | | Sedelow, Yorksh. |
| | Yelland, Yorksh. | | Sheepwash, Devonsh. |
| | Ymwith | | Shelborn |
| 15 | Camberwell, Surry | | Sherborn, Dorsetsh. |
| | Daventry, Northampt. | | Stroud-water, Glouc. |
| | St. Deacon, Somers. | | Wakefield, Yorksh. |
| | Linton | | Walden, Essex |
| | Thunderley, Essex | | Waltham-Lawrence, Berks |
| | | | 21 Warminster, |

- 21 Warminster, Wilts
Winflow, Bucks, Th
22 Allchurch, Heref.
23 Retford, Nottingh. S
24 Bleagon, Somersf.
St. Eades
Tuxbury
25 Caerfilly, Glamo.
26 St. Albans, Hertf.
Bakewel, Derb.
Bampton in the Bush, Oxf. W
Bo'ton, Lanc.
Cardigan
CARLISLE, Cumb. S
Corby
Cambridge, S
Dryfield, Yorksh.
Dunmow, Essex
Eastbrint, Somersf.
Eglewisbate
Ellefmere, Shropsh. T
Gisborough, Yorksh. M
Goudhurst, Kent
Hermitage, Dorsetsh.
Hinckley, Leic. M
Huntington
Uminster, Somersf. S
Ilsey, Berks
Lelant, Cornw.
Leskard, Cornw. S.
Luton, Bedf.
Marlborough, Wilts
St. Mary Ottery, Devonsh.
St. Mary's Parish, Glamo.
Morelidge, Somersf.
Newin
Newport, Monm. S
Newport Moor
Northampton
Preston, Lanc.
Rhaiadergwy, Radn.
Ross, Heref.
Rumsey, Hampsh.
Stow, Linc.
Stroud
Swansey, Glamo.
Tenbury, Worc.
Thornbury, Glouc. S
Turbury, Cumb.
Whiteland
31 North Moor
S E P T E M B E R
4 Acton, Middl
Aldboreugh, Suff.

- Ashby-de-la-Zouch, Leic. S
Ashford, Kent
4 Beaulley, Hampsh.
Beggar's Bush, Middl.
Bookfordslee, Devonsh.
Bridgestock
Bromley Pagets
Chaffin
Chipping Norton, Oxf.
Corsham, Wilts
Crampborn
Cranborn, Dorsetsh. W
Crookhorn. Somersf. S
Crowland, Linc. S
Crowley, Glouc.
Croyley
Dover, Kent
Farrington, Berks
Fanningham, Suff.
Frampton, Dorsetsh.
Grimsby, Linc. W
Hetherly, Devonsh.
Horewood
Kidderminster, Worc. Th
Larick, Cornw.
Lemster, Heref.
Leftwithiel, Cornw.
LONDON, Barthol. Fair
Mere, Wilts
Monmouth, S
Montgomery
Namptwich, Chesh. S
Newbury, Berks
Northallerton, Yorksh.
Northwich, Chesh.
NORWICH, Norf. W F S
OXFORD
Sandy Chapel
Silverton, Devonsh.
Stowbridge, Dorsetsh.
Sudbury, Suff.
Tewkesbury, Glouc.
Tuddington, Bedf. Th
Watford, Hertf. T
Watlington, Oxf. S
5 Botley, Hampsh.
Brecknock
Kilnorton, Cornw.
6 Camelford, Cornw.
Ilchester, Somersf.
9 Bromsgrove, Worc.
Devizes, Wilts
Fordingbridge, Hampsh.
Halston, Suff.

- 9 Harlow-bush, Essex
 Helston, Cornw.
 Oakingham, Berks
 Orm-kirk, Lanc. T
 Peverel, Devonsh.
 Sandford-Peverel, Devonsh.
 St. John's Bridge, Glouc.
 Sturbridge, Worc.
 Tavistock, Devonsh.
 Welshpole, Montg.
 Westun-zealand, Somersf.
 10 Uccun, Devonsh.
 11 Toller-downs, Devonsh.
 Wareham, Dorsetsh.
 12 Chapel Silvas
 Cranbrook, Kent
 Downderry-hill
 Farnborough, Kent
 St. Giles's near Winchester
 Gillingham, Dorsetsh.
 Kellington, Cornw.
 Kilmanton, Devonsh.
 Kirton, Devonsh.
 Neath, Devonsh.
 Tregony, Cornw.
 Whitehaven, Camb. T
 Wiltou, Wilts, W
 13 Abingdon, Berks
 Acton, Glouc.
 Eppin, Essex
 14 St. Tiddy, Cornw.
 Winborn, Dorsetsh.
 15 Oakham, Rutl.
 17 Probus, Cornw.
 18 Neathstow, Somersf.
 Ware, Hertf. T
 Woodbury-hill, Dorsetsh.
 19 Barnstaple, Devonsh. F
 Beaumaris, Angl. WS
 Bemipster, Dorsetsh. Th
 Bishop's-Lidiard, Somersf.
 Blackburn, Lanc.
 Brerewood, Staff. T
 Bruton, Somersf.
 Buckland, Somersf.
 Bury, Lanc.
 Calton, Chesh.
 Cardiffe, Glam.
 Cardigan
 Chatham, Kent
 Clack, Wilts
 Danebury, Devonsh.
 Dilton-Marsh, Wilts
 19 Drayton, Shropsh. W
 Edge-mead, Somersf.
 Gilborn
 Gisbrough, Yorksh.
 Glastenbury, Somersf.
 Haulton, Chesh.
 Hertford
 Huntington
 Landysfel
 Meriwick, Cornw.
 Northampton
 Panwick, Glouc. T
 Partney
 Pirelli
 R. river, Kent
 Rockingham, Northamp. Th
 Sm. ath
 Snide
 Southwark, Surry
 Spalding, Linc. T
 Steple-Ashron, Wil s
 St. Mary, Somersf.
 Stratford on Avon, Warw.
 Stretton-Church, Shropsh.
 Sturbridge, Camb.
 Swindon, Wilts, M
 Tenby, Pemb.
 The-flon, Warw.
 Tuxford, Nottingh.
 Uttoxeter, Staff.
 Wakefield, Yorksh.
 Waltham
 Wandsworth, Surry
 Westerly
 Westmeir
 Whitland
 Wolpit, Suff.
 Woold
 WORCESTER
 Worton, Somersf.
 20 Winton, Somersf. T
 21 Basing-downs, Hampsh.
 Evesham, Worc.
 Fowey, Cornw.
 23 Enfield, Middl.
 Stow gussy, Somersf.
 24 Horril, Hampsh.
 Kinton, Heref. T
 Ledwyn
 Newton, Lanc.
 Vabley
 Wooking
 25 Abergavenny, Monm.
 25 Baberry

- 25 Paberry
 Baisley Kent
 Burford, Oxf.
 Chesterfield, Derb.
 Camsbury, Somersf.
 Cowbridge, Glam.
 Derris, Glouc.
 Hartland, Devonsh. S
 Heytsbury, Wilts
 Highdown, Suff.
 High Wickham, Bucks, F
 Moncton
 Newborough
 Newcastle in Emlin
 Newport
 Oretton
 Penhall, Cornw.
 Ramsbury, Wilts
 Rhaiadergwy, Radn.
 Richmond.
 Rippon, Yorksh.
 Ross, Heref.
 Shroughton, Dorsetsh.
 St. Stephen, Cornw.
 Waltham Abbey, Essex
 Whilby
 Wilscumb, Somersf.
 Wotton-under-Edge, Glouc. F

- 26 Cliffe, Suff.
 27 Northall, Middl.
 28 GLOUCESTER
 Lanydlos, Montg.
 Newbridge, Oxf.
 Savord, Somersf.
 29 Castle-carey, Somersf.
 Lanvillings, Montg.
 Wallingford, Berks

- 30 Ruthin
 OCTOBER

- 1 Aberguilly
 Bromesgrove
 Chudleigh, Devonsh.
 Clapon
 Congleton, Chesh.
 Cromstock, Devon.
 Cricklade, Wilts, S
 Croydon, Surry
 Manchester, Lanc. S
 Ruthyn, Denb. M
 2 Bakewell, Derb.
 Balnock, Hertf.
 Beckington, Devonsh.
 Bedford
 Bradninch, Devonsh.

- 2 Braintree, Essex, W
 Buckingham
 Daventry, Northampt.
 Devizes, Wilts
 Dover, Kent
 Duncton, Wilts
 Eastread
 St. Edmund's Bury, Suff. W
 Hambleton, Hampsh.
 Holmesley, Yorksh. S
 Holding
 Houlsworth, Devonsh. S
 St. Ives, Hunt. M
 Katharine-hill, by Guilf. Surry
 Keynton, Warw.
 Lamborn, Berks
 Leskard, Cornw.
 Lidbury, Heref.
 Lime, Dorsetsh.
 Limington, Hampsh.
 Maiden Bradley, Wilts
 Malden, Essex
 Mariborough, Wilts
 Midnal
 Newport, Glouc.
 North Taunton, Devonsh.
 Nottingham, W F S
 Reading, Berks
 Stern Abbey, Devonsh.
 Shepton, Wilts
 Shrewsbury, Shropsh.
 Sittingham
 Stafford
 Waldgrove, Berks
 Warbridge, Cornw.
 Wendover, Bucks
 Weyhill, Hampsh.
 Weymer
 Winny
 Witham, Essex, T
 Wiheral
 Woodham-ferries, Essex
 Woodstock, Oxf.
 3 Derby
 Yarum Castle, Wilts
 4 Penkridge, Staff.
 5 Lamport, Somersf.
 Langavilling
 6 Malton, Yorksh.
 8 Challock, Kent
 9 Caerfilly, Glam.
 Caermarthen
 Dolgeth, Merion. T
 Grisman, Monm.

- 9 Kingsland, Heref.
 10 Aberconway
 St. Alban's Hertf.
 Ashborn-peak, Derb.
 Balmstock
 Basingstoke, Hampsh. W
 Birmingham, Warw. Th
 Bishop's Stortford, Hertf. Th
 Blackheath, Kent
 Blockly, Oxf.
 Bloxon, Oxf.
 Bookham, Surry
 Borough, Somersf.
 Brent, Devonsh.
 Bridport, Dorsetsh.
 Buckland
 Burwel
 Chagford, Devonsh.
 CHESTER
 Cheslock, Dorsetsh.
 CHICHESTER, Suffex
 Chrish
 Chulbury, Oxf.
 Cock rmouth, Cumb. M
 Dieping, Wilts, Th
 Eastlow, Cornw.
 Glastenbury, Somersf.
 Hadley, Suff. M
 Hay, Breckn.
 Higham, Kent
 Higham-ferris, Northamp.
 Highworth, Wilts
 Hull, Yorksh. Th
 Kasbuckton, Glam.
 Keynton, Wilts
 Killingworth, Northumb.
 Lancaster
 Lanilangle
 Lavenham, Suff. T
 Leicester
 Lochyr
 Ludlow, Shropsh.
 Machynleth, Montg.
 Mere, Wilts
 Mether
 Milbrook, Cornw.
 Michel Dean, Glouc. M
 Milliner
 Milverton, Somersf.
 Mounts Bay, Cornw.
 Ower, Dorsetsh.
 Penkridge
 Pentre
 Pontipole, Monm.
 Selby, Yorksh.
 CHICHESTER, Suffex
 Shelford, Bedf.
 Sittingborn, Kent
 Southbrent, Somersf.
 Stonehouse, Glouc.
 Stow, Linc.
 Tavistock, Devonsh.
 Tewksbury, Glouc.
 Thame, Oxf. T
 Tilverton
 Tinnmouth
 Tiverton, Devonsh. T
 Torrington, Devonsh.
 Trewin, Cornw.
 Uxbridge, Middl.
 11 Castor, Linc. S
 Caxton, Camb. T
 Redruth, Cornw.
 Sevenoke, Cent
 13 Windsor, Berks
 14 Button-Moor
 15 Wead, Essex
 16 Bosworth, Leic.
 17 Chapel in Fiith, Derb.
 St. Faith's by Norwich
 Gainsborough, Linc.
 Gayworth by Lynn
 Havant by Hampsh.
 Maidstone, Kent
 Rochford, Essex
 Wantage, Berks
 18 Christ-Church, Hampsh.
 Workop, Nottingh.
 19 Bishop's Stortford, Hertf.
 Caerfilly, Glam.
 Dundogil, Cornw.
 Pont-Stephen
 Swansey, Glam.
 Yarum, Yorksh.
 20 Ashborn-Peak, Derb.
 Blith, Nottingh.
 Broadels, Devonsh.
 Devizes, Wilts
 Eltham, Kent
 Harborough, Leic. T
 HEREFORD
 Sawbridgew rth
 Thorock-graies, Essex
 21 Clffe, Suffex
 Downs, Cornw.
 Sheepwash, Devonsh.
 22 WELLS,

- 22 WELLS, Somersf.
 23 Bolton-fernesh
 Longoveth
 Saffron Walden, Essex
 Spetty
 24 Aberstow
 Charing, Kent
 Chrustrum
 Colchester, Essex
 Drayton, Shropsh.
 Edmonstow, Nottingham.
 Gravesend, Kent
 Hitching, Hertf.
 Hodnet, Shropsh.
 Leigh-on-buzzard, Bedf.
 Marshfield, Glouc. T
 Newport, Montg.
 Royston, Hertf.
 Stanton, Linc. M
 Stopford
 Stow in the Wold, Glouc.
 Sturminster, Glouc.
 Tamworth, Staff.
 Tunbridge, Kent
 Wainfleet
 WINCHESTER, Hampsh.
 25 Queen's-Camel, Somersf.
 Whitechurch, Hampsh. F
 26 Affington, Devonsh.
 28 Market-Jew, Cornw.
 29 Malmsbury, Wilts
 Arden, Yorksh.
 Ashwell, Hertf.
 Bampton, Devonsh.
 Banbury, Oxf.
 Barnet, Hertf.
 Brickhill, Bucks
 Bridgnorth, Shropsh.
 Burton on Trent
 Chag'ord, Devonsh.
 Charney
 Chaulton, Kent
 Chedder, Somersf.
 Chippenham, Wilts
 Chislebury, Somersf.
 Cliff, Northamp.
 Corfe-Castle, Dorsetsh.
 ELY, Camb.
 Everly-Green, Berks
 Ewel, Surry
 Farringdon, Berks
 Halesworth, Suff. T
 Hampton-Road, Glouc.
 Hatfield, Hertf.

- 29 Henly, Warw. M
 Hindon, Wilts
 Holt, Norfolk
 Kidwilly
 Knotsford, Chesh.
 Lantriffent, Glam.
 St. Lawrence, Cornw.
 Marlow on Thames, Bucks, S
 Middlewich, Chesh. T
 Midway
 Neware
 Newark, Nottingham.
 Newcastle upon Tyne
 Newnham, Glouc.
 Newton Peopleford, Devonsh.
 Pamphile, Dorsetsh.
 Peddletown, Dorsetsh.
 Plymouth, Devonsh. M Th S
 Radnor, Th
 Thirsk, Yorksh. M
 Tiddestdale, Derb.
 Tocester, Northamp.
 Torist, Yorksh.
 Uphaven, Wilts
 Usk, Monm.
 Wellingborough, Northamp. W
 Wigan, Lanc. M F
 Winterborn, Glouc.
 Wrickley

30 Frideswin, Oxf.

NOVEMBER

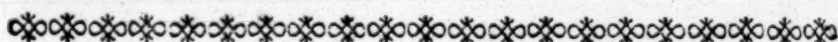
- 1 Lanibithew
 Lantham
 Newport
 Newport-pagnet, Bucks
 Stokesley, Yorksh.
 2 Wye, Kent
 3 Bicklesworth, Bucks
 4 Appleshaw, Hampsh.
 5 Beverley, Yorksh.
 Ratfdale, Lanc.
 6 Whemerly
 8 Aberconway
 Ashby-de-la-Zouch, Leic.
 Bidderden
 Blandford, Dorsetsh.
 Chillam, Kent
 Chipping-norton, Oxf.
 Cirencester, Glouc.
 Columpton, Devonsh.
 COVENTRY, Warw.
 Dis, Norf. F
 Droitwich, Worc.
 Dalverton, Somersf.

- 8 Exmouth, Devonsh.
 Hallaton, Leic.
 Hatherley, Devonsh.
 Helston, Cornw.
 Hertford
 Landed
 Lemster, Heref.
 Linton, Devonsh. S
 Lower Knotsford, Chesh.
 St. Michael's, Cornw.
 Milborn Port, Dorsetsh.
 Needham, Suff. W
 Newbury, Berks
 Newland, Cornw.
 Newmarket, Suff. Th
OXFORD
 Pensford, Somers.
 Preston in Holderness
 Ragland, Monm.
 Rochdale, Lanc. T
 Rumsley, Hampsh.
 Somerton, Somers.
 Southbovey, Devonsh.
 Stratton, Cornw.
 Talsarn green
 Totness, Devonsh.
 Warminster
 Warwick
 9 Albrighton, Shropsh.
 20 Falmouth, Cornw.
ROCHESTER, Kent
 11 Rofs, Heref.
 Ruthyn, Denb.
 14 Beesley, Glouc.
 Bickleford, Bucks
 Bishop's Castle, Shropsh.
 Blackney, Glouc.
 Bleechingley
 Botley, Hampsh.
 Brombel, Somers.
 Castlemain
 Chelmsford, Essex
 Colliton, Devonsh. Th
 Fairford, Glouc.
 Haley, Berks
 Kellington, Cornw.
 Keilom, Cornw.
 North Moulton, Devonsh.
 Pool, Dorsetsh. M Th
 Sawley, Derb.
 Wallingford, Berks
 Wilton, Wilts
 Witham, Essex
 12 Woodstock, Oxf.
 13 Brookland, Devonsh.
 Chard, Somers.
 Epping, Essex
 Kingston upon Thames, Surrey
 Leek, Staff.
 Lestwithiel, Cornw.
 Loughborough, Cornw.
 Macclesfield, Chesh.
 Mayfield, Suffex
 Oakingham, Berks
 Paddam ba'ton, Norf.
 Wotton-basset, Wilts
 Wakefield
 14 Caermarthen
 15 Bedford
 17 Andover, Hampsh.
 Brecknock
 Bridgend, Glam. S
 Colberick, Wilts
 Launceston, Cornw.
 Lesford, Lanc.
 Mayling, Kent
 Morton in Holderness, Yorksh.
 Newport, Monm.
 Newport-pagnel, Bucks
 Newport-pond, Essex
 Newton-bushel, Devonsh.
 Otterford, Somers.
 Salford
 Stanley, Glouc. S
 Stepham, Somers.
 Storrord, Hertf.
 Sutton, Hampsh.
 Tockington, Glouc.
 Tregony, Cornw.
 Trigney, Lanc.
 Wellington
 Wetshad
 Yeovil, Somers.
 Bridlington, Yorksh. S
 21 Aberwingreen-cliffe
 Garstang, Lanc. Th
 Lamport, Somers.
 Lanibeth
 Lenton, Nottingh.
 Loddon, Norf.
 Rugby, Warw.
 Shesnal, Shropsh.
 Wem, Shropsh.
 22 St. Berkennen
 Ashburton, Devonsh. T S
 Boscastle, Cornw.

- 22 Bottingham, Yorksh.
Bow, Devonsh. Th
Camburn, Cornw.
Dedding'on, Oxf.
Dover, Kent
St. Edmund's Bury Suff.
Ellismere, Shropsh.
Falkingham, Linc. Th
Guilford, Surry
Martin's Town, Dorsetf.
Newcastle under Line
Nunny, Somersf.
Pembroke, Heref.
Perlock, Somersf.
Skipton, Yorkf.
Tream
Whittlegridge
YORK
- 24 Ashamstead, Berks
Machynleth, Montg.
- 28 GLOUCESTER
Harlow, Essex
Hide
Hocknorton, Oxf.
LINCOLN
Northampton
Spalding, Linc.
- 30 Horsham, Suffex
Truro, Cornw. W S
- 31 Dulton, Devonf.
Health
Ingatestone, Essex
Sutton, Kent
D E C E M B E R.
- 2 Ludlow, Shropsh.
Marlborough, Wilts
Mannensley-green, Hampf.
Monmouth
Pennyfont
Sawthey
- 3 Bangor, Carn.
Bwelth
Caerling
Dursley, Glouc.
Kates Cro's, Essex
Lamborn, Berks
Sandwich, Kent, W S
Tuddington, Bedf.
Witney, Oxf.
- 4 Coward, Glouc.
- 5 Headon, Yorkf.
Higham Ferris, Northampt.
Launceston, Cornw.
Easfield, Middl.
- 8 Ashburn-peak, Derb.
- 9 Boston, Linc.
Kimbolton, Hunt.
Warrington, Lanc.
- 10 Abingdon, Bedf.
Amptill, Bedf.
St. Andrew's Milborn, Dorf. .
St. Austel, Cornw.
Baldock, Her f.
Bewdley, Worc.
B ackley, Northampt. W
Bradford Wilts
Broadenbury, Devonsh.
Cardiffe, Glam.
Chippenharn, Wilts
Chorly, Devonsh.
Cobham, Surry
Collingborough, Wilts
Cromwell, Glouc.
Cubley, Derb.
Cullington, Devonsh.
Grinstead, Suffex
Harleigh, Merion.
Maidenhead, Berks
Malden Bradley
Market Jew, Cornw.
More on, Devonsh.
Newbury, Berks
Owestry, Shropsh.
Petersfield, Hampsh.
Prue Preston
Ringwood, Hampsh.
ROCHESTER, Kent
Rofs Heref.
Strett n, Cornw.
Tavistock, Devonsh.
Wakefield, Yorkf.
Atherston, Warw.
Northampton
- 15 Colgeth
Newton, Linc.
- 16 Pluckley
Arundel, Suffex
Bodmin, Cornw.
- 17 Camb, Somersf.
Cranborn, Dorsetf.
St. Eades
EXETER, Devonf.
Grantham, Linc. S
Heathings
Hemingham, Essex
Hornsey, Yorkf.
St. Nicholas, Glam.
- 17 North

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- | | |
|----------------------------|-------------------------|
| 17 North Taunton, Devonsh. | 19 Cardigan |
| Northwich, Chesh. | Clethero, Lanc. |
| Sevenoke, Kent | Huxham |
| Sideland, Dorsetsh. | Leicester |
| Spalding, Linc. | Malpas, Chesh. |
| Tockington, Glouc. | Truro, Cornw. |
| Wallingford, Berks. | Wotton Basslet, Wilts |
| Woodstock, Oxf. | 21 Marywick, Cornw. |
| 18 Sandhurst | 22 Newport |
| 19 Beaumaris, Angl. | 24 Ambresbury, Wilts, F |



AN ALPHABETICAL LIST of the MOVEABLE FAIRS.

Note, M stands for Monday, T for Tuesday, W for Wednesday, Th for Thursday, F for Friday, S for Saturday, Sun for Sunday.

The Letters in () denote the Market-days of those Towns not mentioned in the Fixed Fairs.

- | | |
|---|---|
| A Berfoth, Yorksh. W after Trinity Sun | Ashwater, Devonsh. M after Lammas-day |
| Abergavenny, Monm. Trinity T | Axminster, Devonsh. W after Michaelmas-day |
| Abingdon, Berks, first M in Lent, and M before Michaelmas-day | Aye or Eye, Suff. Whit. M (S) |
| Abbey-Milton, Dorsetsh. T after St. James's-day | Bampton, Devonsh. Whit. T |
| Abridge, Essex, Easter M | Banbury, Oxf. Th after Twelfth-day, first Th in Lent, Holy Th, Trinity Th, Th after Michaelmas-day, and Th before St. Andrew's-day. |
| Acton, Good F | Basing-downs, Hampsh. Easter T |
| Affrington, Devonsh. every W in Quarter Sessions Week | Basingstoke, Hampsh. Whit M |
| Agmondesham or Amersham Bucks, Whit M (T) | Bassilton, Hampsh. M. after July 7. |
| Aylesbury, Bucks, Palm Sun | Beaumaris, Angl. Ascension-day |
| Alesford, Hampsh. Holy Th | Bedford, first T in Lent |
| Amphthill, Bedf. Good F | Bedington, Surry, Easter M |
| Andover, Hampsh. F before Mid-lent Sun. | Beggars Bush, Middl. Holy Th |
| Appleby, Westm. Whit. M (S) | Berkhamstead, Hertf. Shrove M |
| Ashborn, first Th in June, and first Th in March | Berrington, Somersf. Trinity M |
| Ashby-de-la-Zouch, Leic. Whit. T | Beverley, Yorksh. Easter W and all Rotation-week |
| Ashford, Kent, first Sun. after St. Bartholomew's-day | Bicester, Oxf. F before Michaelmas, and the next F |
| Ash-hill, Somersf. W after. Sept. 8. and Easter W | Bicklefworth, Bucks, S in Easter-week, |

- week, Whit M, M after Low Sun
 Billingsworth, Palm Sun
 Birmingham, Warw. Ascension-day, Corpus Christi
 Bishops-Stortford, Hertf. Corpus Christi
 Blacknel, Dorseth. M. before St. Bartholomew's-day
 Bodmin, Cornw. S after Midlent Sun, and W after Whit Sun
 Bokland, Devonsh. Whit. T
 Botley, Hampsh. M before Whit Sun, T before Shrove T, T before St Bartholomew's-day
 Bow, Devonsh. Holy Th
 Bow, Middl. Th in Whitsun-week
 Brackley, Northampt. second W in April
 Bradford, Wilts, Trinity M (M)
 Bradstead, Kent, Ascension-day
 Brailers, Easter T
 Bramyard, Heref. Th. before March 5, and Whit M
 Bridgend, Glam. Ascension-day
 Bridgwater, Som. first Th in Lent
 Bridport, Dorseth. Holy Th
 Broad-henbury, Devonsh. Whit T
 Broad-street, Kent, Holy Th
 Broad-windfor, Dorf. Trinity M
 Broughton in Spurnace, M before St. Peter's day
 Broughton, Hampf. M after St. Peter's-day
 Burton, Somersf. Good F (M)
 Buckingham. M after Twelfth-day
 Buckland, Kent, All-Souls-day, and T after Whit Sun
 Budley, Devonsh. Good F (M)
 Burford, Oxf. S before Michaelmas, and the next S
 Burlington, Yorksh.. Sun after Ascension-day
 Burnel, Good F
 Burton, Lanc. Whit M
 Burton, Linc. Ascension-day
 Burwill, Berks, Whit M
 Bury, Lanc. Good F
 Caerfilly, Glam. Trinity M
 Caerlion, Monm. W before Easter
 Caerwigs, Corpus Christi
 Cakefield, Suff. Whit Th
 Cambleford, Corn. F after Mar. 10
 Camdene, Glouc. Ash W
 Canend, Oxf. Whit T
 Canterbury, Kent, Whit T
 Carlisle, Cumb. W before Easter, and first W in June
 Castle-carey, Somersf. T before Palm Sun
 Castle-heath, Wilts, M after St. James's-day
 Castle-town, Dorf. S after Holy Th
 Cern Abbey, Dorseth. Midlent and Holy Th
 Chalbury, Oxf. second F in Lent and second F in May
 Chapel in Frith, Derb. Ascension-day
 Chapelw, Berks, Good F
 Chapelheath, Glam. Trinity M
 Cheltenham, Glouc. Holy Th
 Chepstow, Monm. F before St. Luke's day
 Cherrington, Dev. M after Sept. 8
 Chertsey, Surry, first M in Lent
 Chewton, Somersf. Holy Th
 Chichester, Suffex, Ash W, and Whit T
 Chudleigh, Devonsh. Easter T
 Chingar, Devonsh. Easter T
 Chipping, Whit T
 Chipping-norton, Oxf. last F in May, W before Midsummer-day, and W after
 Christ-Church, Hampsh. Trin. T
 Cilcutten, Cornw. Holy Th
 Cirencester, Glouc. Easter T, and Holy Th
 Cockermouth, Cumb. Whit M
 Cogshall, Essex, F in Whitsun week (S)
 Colebrooke, Bucks, 3d W in April
 Comb-martin, Devonsh. Whit M
 Coventry, Warw. Easter T, Corpus Christi
 Crefwell, Trinity M
 Cribby, Whit M
 Cucklade, Wilts, third W in April and third T in August
 Cullum, Cornw. Th after Mid. Sun and Th after Allhallow's-day
 Curry-evil, Somersf. M after Lamas-day
 Cutcomb, Somersf. Holy Th
 Dalton, Lanc. W before Lady-d. (S)
 Darking, Surry, Ascension-day (Th)
 Darlington, Durham, East M, 10 every

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every Fortnight after till Christ-
mas (M)
Dartington, Devonsh. M after
Lammas-day
Daventry, Northampt. Easter T
and Whit T
Denbigh, M before Lady-day
Derby, F in Easter-week, and F
in Whitfun-week
Devizes, Wilts, Holy Th, and
Trinity Th
Dicker, Suffex, Holy Th
Dodbrook, Devonsh. W before
Palm Sun (W)
Dolidge, Devonsh. Good F
Dolton, Dev. W before Lady-day
Dorchester, Oxfr.
Dorchester, Dorsetsh. Trinity M
Dorland, Dorsetsh. W before St.
Bartholomew's-day
Dorrington, Whit M
Drayton, Shropsh. W before Palm S
Dryfield, Yorksh. Whit M, and
Easter M
Dulverton, Somers. the Feast is
the Sun after July 7, and the
Fair is the M after
Dunstable, Bedf. Ash W
Dunster, Somers. Whit M (F)
Eaton by Windfor, Bucks, Ash W
Eccleshall, Staff. Ascens.-d. (F)
St. Edmundsbury, Suff. Good F
Eggleston, Ascension-day
Ellesmere, Shropsh. Whit T
Elmoregreen, Dorf. Holy Th
Eltham in Kent, Palm M, and
Whit M
Enfield, Middl. Good F
Englesfield, Suff. all Rogat.-week
Epping, Essex, Whit T
Erith, Kent, Holy Th
Evesham, Worc. M after Easter,
and Whit M
Exeter, Dev. Ash W and Whit M
Fasley, Warw. Master St. Michael's
Farnham, Surry, Holy Th
Farringdon, Berks, Whit T
Fenchampstead, Berks, Whit T
Folkingham, Linc. Ash W
Fowey, Cornw. Shrove T
Frodinghay, Sun Fortnight after
Midsummer-day
Gainsborough, Linc. Easter M
Gillingham, Dorf. Trinity M

Godmanchester, Easter T
Graies, Essex, Whit T
Grantham, Linc. 5th Sun in Lent
Great-Warley, Essex, Whit M
Green-street, Th before Ascen-
sion-day
Guildford, Surry, Good F
Hadlow, Kent, Whit M
Hallaton, Leic. Ascension-day
Hammock, Easter T
Hampton-Road, Glouc. Trinity M
Hartley-green, Lanc. Whit M
Hartland, Dev. Easter W, Whit T
Hartfield, Hertf. Good F
Haverhill, Th after July 3
Helmston, Suffex, fifth Sun in
Lent (Th)
Helsion, Cornw. 2 Fairs the two
S before St. Thomas's-day and
S before Midient Sun, and S be-
fore Palm Sun, and Whit M
Hempstead, Hertf. Th after Trinity
M, and second M in Sept. (Th)
Henly on Thames, Oxf. Holy
Th, Trinity Th, and Th before
Midsummer-day
Hereford, Easter W, and T after
Candlemas-day
Hertford, S before the fifth Sun in
Lent
Heckfield, Hampsh. Good F
High-beach, Essex, Whit M and
S before St Thomas's-day
Hilnarton, Wilts, Easter M
Hindon, Wilts, M before Whit Sun
Hinckley, Leic. M after Twelfsh-
day.
Hiching, Hertf. Easter T
Hounslow, Middl. Trinity M
Huntingdon, Good F
Ighteam, Kent, W in Whitfun-
week, called Coxcomb Fair
Ilchester, Som. M before Palm Sun
Illey, Berks, Easter W, and Whit W
Ingham, Norf. Trinity M
Inglesfield, Lanc. M before Holy Th
Ingleswait, M before Holy Th
St. John's Worc. F after Palm Sun
Ipswich, Suff. Good F
St. Ives, Cornw. Good F, and S
before Advent Sun
St. Ives, Hunt. Whit M
Kidderminster, Worc. Holy Th,
and Whit Th

Kelling
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Kemli
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Long
Low
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- Kellington, Cornw. Trinity Th
 Holy Th
 Kemfing, Eaſter T
 Knechtſford, High, Cheſ. Whit T
 Kirkby-Stephen, Weſtm. Whit. M
 Kettering, Northamp. Th before
 Eaſter, Th before Michaelmas-
 day, and Th before St. Tho-
 mas's-day
 Kingſton upon Thames, Surry,
 Palm Sun, Whit, Th
 Kington, Heref. W before Eaſter
 Whit. M
 Kinnow, Aſcenſion-day
 Kneveſtuck, Eſſex, Whit T
 Lamberd's Caſtle, Dorſ. W before
 Midſummer-day
 Lambern, Berks, Whit M
 Lancarvan, Glam. Good F
 Lancaſter, Palm Sun
 Landaff, Glam. Whit. M
 Landar-n, Palm Sun
 Landyſſel, Th before Palm Sun
 Langport, Som. ſecond T in Lent
 Lanſon, Cornw. Whit. M
 Lanvil-ing, Montg. W before Eaſt
 Lanwiſt, Corpus Chriſti
 Layton-buzzard, Whit. T
 Leek, Staff. Whit. M
 Lei-ceſter, Palm Sun
 Leominſter, Heref. T before Mid-
 lent Sun
 Lenham, Kent, Whit. M
 Leſkard, Cornw. Shrove M, Holy
 Th, and M before Palm Sun
 Lewes, Suſſex, Whit. M (S)
 Leynord-ſtanly, Glouc. S after St.
 Swithin's-day
 Lidbury, Heref. M before Eaſter,
 M before St. Luke's-day, and
 M before St. Thomas's-day.
 Linford, Somerſetſ. Holy Th
 Liſton, Devon, Holy Th
 Lindeton, Whit. W
 Linton, Cambr. Whit. M
 Litchfield, Staff. every Th after
 Twelfth-day for three Weeks,
 and Aſh W, and F before Simon
 and Jude
 Longner, Good F
 Longuir, Staff. Whit. T
 Lowth, Linc. 3d Sun after Eaſter
 Ludlow, Shrop. M before Eaſter
 Lutterworth, Leic. Aſcenſion-
 day, and Th after Twelfth-
 day (Th)
 Magron, Monm. every M in Lent
 Maidenhead, Berks, Whit W
 Maldon, Eſſex, Whit T
 Malling, Kent, Good F
 Malton, Wilts, M after Eaſter
 Manchester, Lanc. Whit. M
 Margum, Glam. Good F
 Market-Jew, Cornw. Palm M,
 and Good F
 Marſgate, Eaſter W
 St. Mary Ottery, Devon, T before
 Palm Sun. and Trinity T
 Melton-mowbray, Leic. M after
 Twelfth-day, and Whit T
 Michael-dean, Glouc. Eaſter M
 St. Michael's, M after St. Mi-
 chael's-day
 Middleham, Yorkſh. Whit. M (M)
 Middlewich, Cheſ. Aſcenſion-d.
 Midhurſt, Suſſex, Whit. T
 Midlome, Whit. M
 Midſummer-norton, Som. Good F
 Milling, Dorſ. Palm Sun Good F
 Milverton, Somerſ. Eaſter T
 Miniſter, Iſle of Sheppy, Kent,
 Palm M
 Monmouth, Whit T
 Morpeth, Northumb. Holy Th Eve
 Morton, Hampſ. Trinity Th
 Mount, Cornw. M after Middl. Sun
 Neath, Glam. Trinity Th
 St. Neots, Hunt. Corp. Chriſti (T)
 Newark on Trent, Whit W
 Newbury, Berks, firſt M in Lent,
 Holy Th
 Newcaſtle under Line, F after
 Twelfth-day, M after Low Sun
 Newent, Glouc. M before Eaſter,
 W before Whit. Sun, and F after
 Sept. 8.
 New-Inn, Whitſun Eve
 Newport, Hampſ. Whit. M and
 Palm Sun
 Newport, Montg. Corpus Chriſti
 Newton-buſhel, Devonſ. firſt W in
 September
 Norſe, Devonſ. Good F
 Northallerton, Yorkſ. every W
 from Chriſtmas till June
 Northampton, every F from Chriſt-
 mas till June North-

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- North Church, Hertf. S before Michaelmas
 North-fleet, Kent, Easter T, and Whit T
 North-moulton, Dorsetsh. first T in May
 North-street, Easter T
 Norwich, Maundy Th, Whitfun and Trinity Eves
 Nutley, Suffex, Good F
 Oakingham, Berks, Th before Shrove T
 Ockington, Devon. second T in March, first T in September, first W in October, and W after Midsummer-day
 Odiam, Hampsh. S before Mid-lent Sun
 Okehampton, Devon. 2d Th in March, and 1st T in September
 Ormskirk, Lanc. Whit M
 Oulney, Bucks, Easter M
 Oundle, Northamp. Whit. M (S)
 Oxford, Easter T
 Panswick, Glouc. Whit T
 Pedleton, Dorsetsh. Easter T
 Penhall, Cornw. Holy T
 Penryth, Cumb. Whit T
 Penzance, Cornw. Trinity Th and Th before Advent Sun
 Plymouth, Devon, Th after St. Luke's day
 Plympton, Devonsh. Holy Th
 St. Pomb's, Good F
 Pontefract, Yorksh. Palm Sun Eve and Trinity Eve
 Point-stephen, Whit W
 Potton, Bedf. 3d T in January, 3d T in July, and Good F (S)
 Prescot, Lanc. Corpus Christi
 Prickwell, Effex, St. Swithin's-day
 Queen's-camel, Som. Trinity Th
 Radnor, Trinity M
 Raddel, Lanc. Whit T
 Ray, Effex, Trinity M
 Rayleigh, Effex, Trinity M (S)
 Rich, Camb. all Rogation-week
 Rippon, Yorksh. Ascension-day
 Risborough, Good F (S)
 Rochford, Effex, Whit T
 Rond, Ascension-day
 Ross, Heref. Ascension-day and Corpus Christi
 Rowel, Northam. Trinity M (M)
 Royston, Hertf. Ash W, and W in Whitfun-week
 Ruilly, Trinity M
 Rumsley, Hampsh. Easter M
 Rye-hill, Whit M
 Ryegate, Surry, Whit M and W in Whitfun-week (T)
 Saffron-Waldon, Effex, Midl. Sun
 Sale, Kent, Whit Th
 Salford, Whit. M
 Salisbury, first Sun in Lent, T after Twelfth-day M before, Lady-day, Whit. T, and Th after St. Michael's-day
 Saltwich, Worc. Good F
 Sandbach, Chesh. Easter, T and W, and Th and F before Christmas (Th)
 Sandbury, Easter T
 Scarborough, Yorksh. Holy Th (S)
 Scholde, Easter T
 Searn-Abbey, Midlent Sun, and Holy Th
 Selby, Yorksh. T after Easter
 Senbury, Corpus Christi
 Shaftsbury, Dorsetsh. S before Palm Sun
 Sherborn, Dorsetsh. 1st M in Oct.
 Shrewsbury, Shropsh. W after Ascension-day
 Sittingborn, Kent, Whit M
 Skipton upon Craven, Yorksh. Whit M, S in Easter-week, and Trinity M
 Sleaford, Linc. Whit M (M)
 Sudbury, Glouc. Holy Th, and fifth Sun in Lent
 Scham, Camb. M before St. John the Baptist
 Somerton, Th after Easter, T before Holy Th, and T after Palm Sun
 Sosing, M before Easter
 Southampton, Trinity M
 Southaven, Yorksh. Trinity M
 Southovey, Devon. Holy Th
 Southel, Middl. W in Easter-week and second W in October
 South-moulton, Devonf. S before June 11, and first T in September (S)
 Spilsby, Linc. Trinity M (M)
 Stafford,

- Stafford, T before Shrove T
 Stamford, Linc. Sun. after Corpus Christi and Midlent Sun,
 Stockbridge, Hampsh. Holy Th
 Stockclear, Whit M
 Stockley, Yorksh. S after April 23
 Stockport, Chesh. Ascension-day, and Corpus Christi
 Stockenham, Devon, Good F
 Stokesley, Yorksh. Trinity M
 Stow in Guillam, F in Whitfun-week
 Stow, Monm. Whit T
 Stratford on Avon, Warw. Ascension-day
 Sudbury, Suff. last Th in April
 Sudminster, Essex, Th before Easter, Ascension-day
 Swansey, Glam. second S in May
 Swindon, Wilts, second M in May and second M in December
 Tamworth, Staff. Ash W
 Tedbury, Glouc. Ash W
 Thame, Oxf. Michaelmas-day, and the next T
 Thaxted, Essex, Sun. after Ascension-day
 Thorn, Yorksh. first M in June
 Thornbury, Glouc. Easter M, and M before St. Thomas's-day
 Thorncomb, Devon, Easter T
 Tiverton, Dev. T after Trinity Th
 St. Tostels, Cornw. Good F, and Whit T
 Treawin, Cornw. Easter T
 Tregony, Cornw. Shrove T
 Truro, Cornw. W after Midlent Sun, and Whit W
 Tunbridge, Kent, Ash W, and Trinity M
 Upper Ottery, Devon, first W in October
 Upton on Severn, Werc. Whit Th
 Uffcum. Devon, Good F
 Ulk, Monm. Trinity M
 Wakefield, Yorksh. third T in August
 Walgrove, Berks. Whit M
 Wallingford, Berks, Th before Easter
 Waltham upon Thames, Surry, W in Easter-week
 Wandsworth, Surry, Whit M
 Watford, Hertf. Trinity M
 Webley, Heref. Holy Th. and Trinity Th (Th)
 Welden, first W in February, and first W in May
 Wellingborough, Northamp. W in Easter-week
 Westbury, Wilts, first F in Lent, and Whit M (F)
 Whitchurch, Hampsh. Whit. M
 Wickham, Bucks, S before Lent
 Wiggon, Lanc. Ascension-day
 Wimbleson, Surry, M after Lady-day
 St. Winard, Monm. Whit W
 Winborn, Dorset. Good F
 Winchester, Hamp. first M in Lent
 Windsor, Berks, Easter T
 Winterborn, Glouc. second Th in February, and second Th in May
 Wisbish, Cambr. M before Lady-day, Palm M and Whitfun-Eve
 Witham, Essex, Allhallow's-day, and Trinity M
 Witheridge, Dev. W after April 15
 Witney, Oxf. Holy Th
 Witney-Statute, Oxf. Th before Michaelmas, and the next Th
 Woodcut, Oxf. M after Nov. 5. after Allhallow's-day
 Woodstock, Oxf. Whit and Th
 Woodstock-statute, September 21 and the next Th
 Worcester, S before Palm Sun. and S after Easter
 Yarmouth, Norf. F. before Good F (S)
 Yarum, Yorksh. third Th in April, Holy Th. and Th after Lady-day

GEOGRAPHY; or, *A Description of the Earth.*

IN our Account of the Solar System (see Page 321) we have given a short Account of the Motion, Figure, and Dimensions of the Earth, together with the Air, or Atmosphere, with which it is surrounded; and shall now proceed to a more particular Description of it's several Parts, that the Reader may form a true Idea of the Globe which Providence has allotted for his Habitation; but, in order to this, it will be proper to begin with describing the Circles which are supposed to be drawn on it's Surface. And it is necessary to be remembered, that every Circle is supposed to be divided into 360 equal Parts, called Degrees; and every Degree into 60 equal Parts, called Minutes; and every Minute into 60 equal Parts, called Seconds, &c.

1. The Equator is a great Circle dividing the Globe into two equal Parts, called the northern and southern Hemispheres. The Centers of this Circle are called the Poles of the World; that on the North is termed the arctic or north Pole, and that on the South is called the antarctic or south Pole; and the Poles are 90 Degrees distant from every Part of the Equator. If this circle be applied to the Heavens, it will there mark out a Circle called the Equinoctial; and is the same which the Sun appears to describe when he rises and sets at Six o'Clock.

2. The Meridian is a Circle drawn through both Poles, and cutting the Equator at right Angles. And, if this Circle be applied to the Heavens, it will there mark out a Circle concentric with it, and may be easily known by the Sun's being always in it at Noon. So that if a Circle be supposed to be drawn from the North to the South Pole, through the Center of the Sun at Noon, it will mark out the Meridian of that Place. But as every Place has it's Meridian, and as the Number of Places is indefinite, so the Number of Meridians is indefinite also.

3. The Horizon is that Circle which separates the Globe into two Parts, called the visible and invisible Hemispheres; or it is that Circle which bounds our Sight, and in which all the heavenly Bodies are at their Rising and Setting. The Spectator is always placed in the Pole or Centre of this Horizon: This Circle, therefore, changes with the Situation of the Spectator, so that every Place has

has it's particular Horizon; and, consequently, the Number of these Circles, like the Meridians, is indefinite. If the Poles or Centers, of the Horizon, be applied to the Heavens, they will mark out two Points, called the *Zenith* and *Nadir*; the former is the Point in the Heavens directly over Head, and the latter another Point directly under Foot: So that if a Line be supposed to be drawn from any Place, through the Center of the Earth, and extended both Ways to the Heavens, it's Extremities will be in the *Zenith* and *Nadir*. And, if we suppose Circles to be drawn from the *Zenith* and *Nadir* to every Part of the Horizon, they will cut it at right Angles, and are called *Azimuth Circles*.

5. The *Ecliptic* is that great Circle in which the Earth moves round the Sun, and is called it's Orbit, or annual Path. This Circle cuts the *Equinoctial*, and forms with it an Angle of 23 Degrees 29 Minutes, and is the same which the Sun appears to describe every Year.

6. The two *Tropics* are lesser Circles of the Sphere, and mark the Sun's North and South Boundaries, and, consequently, are each 23 Degrees and 29 Minutes distant from the *Equator*, one towards the North, and the other towards the South. The former is called the *Tropic of Cancer*, and is the same which the Sun appears to describe on the 21st of *June*; the latter is called the *Tropic of Capricorn*, and is apparently described by the Sun on the 21st of *December*.

7. The *Polar Circles* are also two small Circles of the Sphere, and are each 23 Degrees 29 Minutes distant from it's respective Pole. That towards the North is called the *Arctic Circle*; and that towards the South the *Antarctic*.

Of the Zones, Climate, Latitude, and Longitude.

HAVING described the several Circles supposed to be drawn on the Surface of the Globe and Sphere, we shall now proceed to shew the Uses to which they are applied.

1. The *Tropics* and *polar Circles* divide the Earth into five Parts called *Zones*, of which two are temperate, two rigid, and one burning, or torrid.

The two temperate *Zones* are contained between the *Tropics* and *Polar Circles*; that between the *Tropic of*

Cancer and the northern polar Circle is called the Northern temperate Zone; and in this the greatest Part of *Europe* and *Asia*, and the *English* Colonies in *North-America*, are situated. The southern temperate Zone is situated between the Tropic of *Capricorn* and the southern polar Circle. In this the *Cape of Good Hope*, and all the southern Parts of *South America*, from *Rio Janeiro*, are situated.

The two frigid Zones are comprehended between the two polar Circles. That round the South Pole, called the Southern frigid Zone, has never yet been visited, and is consequently unknown: But many Parts of that round the North Pole have been often visited, Part of *Lapland* and the principal Parts of *Greenland* lying in the northern frigid Zone.

The torrid Zone includes all the Space between the Tropics, and is divided into two equal Parts by the Equator. The greatest Part of *Africa*, the *European* Settlements in the *East-Indies*, the *West-India* Islands, and the principal Parts of *Spanish* and *Portuguese America*, are situated in the torrid Zone. The Ancients, indeed, believed it uninhabitable: but the Discoveries of the Moderns have sufficiently removed the Mistake.

2. The Zones are divided into Climates, which exhibit the different Lengths of the Days on every Part of the Globe. A Climate, therefore, is a certain Space of the Earth, parallel to the Equator, whose longest Day exceeds by a certain Space of Time, the longest Day in the preceding Climate, and this Space of Time is, in most Parts of the Earth, fixed at Half an Hour. The ancient Geographers made but fourteen Climates; seven on each Side of the Equator, extending to 50 Degrees, 30 Minutes; but we now extend them to the Poles, and divide each Hemisphere into thirty Climates.

3. The Ancients distinguished the Inhabitants of the Earth into three Denominations, from the Position of their Noon tide Shadows; calling them *Periscii*, *Heteroscii*, and *Amphiscii*.

The *Periscii* are those who live within the polar Circles, and whose Shadows turn round them every twenty-four Hours.

The *Heteroscii* are those People who inhabit the temperate Zones, and whose Noon-tide Shadows always fall the same Way; those who inhabit the northern temperate Zone,

Zone, casting their Shadow towards the North; and those of the southern towards the South.

The *Amphiscii* are those who inhabit the torrid Zone, and whose Noon-tide Shadows fall different Ways at different Seasons. For when the Sun is to the Northward of them, their Shadows are cast towards the South; and when to the Southward, towards the North. They are also called *Ascii*, because twice a Year the Sun is directly over their Heads, and, consequently, they have no Shadow.

4. The Ancients also divided the Inhabitants of the Earth into *Periæci*, *Antæci*, and *Antipodes*.

The *Periæci* are those who live under the same Parallel of Latitude, and on the same Side of the Equator, but under opposite Meridians: So that, when it is Noon with the one, it is Midnight with the other; and when the Sun rises to the one, he sets to the other.

The *Antæci* are those who live under the same Meridian; and equidistant from the Equator, but on the contrary Sides of it: So that, though it is Noon and Midnight with both at the same Time, yet their Seasons are opposite; for when it is Summer with the one, it is Winter with the other; and when Spring with the one, it is Autumn with the other.

The *Antipodes* are such who live under opposite Parallels and opposite Meridians, and, consequently, their Feet are directly opposite to each other. They have contrary Poles elevated, contrary Seasons, and contrary Days; for when it is Noon in Summer to the one, it is Midnight in Winter to the other; when the Sun is rising in Spring to the one, it is setting in Autumn to the other; and the Length of the Day to the one is the Length of the Night to the other.

5. Geographers, in order to determine the Situation of Places on the Earth, make Use of two Terms, *Latitude* and *Longitude*. Latitude is the Distance of any Place from the Equator towards either of the Poles, and is called North or South Latitude, as the Place is situated on the North or South Side of the Equator. And as the Meridian, like all other Circles, is divided into 360 Degrees, and as the Distance from the Equator to either of the Pole, is 90 Degrees, or the Quarter of a Circle, the greatest Latitude possible is 90 Degrees.

Longitude is the Distance of any Place from some Meridian where Longitude is supposed to begin. When *Ptolemy* invented the Method of distinguishing the Situation of Places, he did it by parallel and meridional Lines; by the parallel Lines he marked the Latitudes into Degrees and Minutes; and by the Meridians he marked the Longitude. The Latitude naturally begins at the Equator; but the Longitude has naturally no fixed Point, and, therefore, may commence at any Meridian. *Ptolemy* fixed his first Meridian at *Teneriffe*, one of the *Canary Islands*, and famous for it's Pike, or prodigious high Mountain, as the most western Part of the then known World, and, at the same Time, an excellent Mark for Mariners. Accordingly, all the old Maps begin their Longitude from *Teneriffe*; and, as there was then only one Side of the Globe known, the Longitude was only extended East to 180 Degrees, the opposite Meridian to *Teneriffe*. But, on the Discovery of *America*, Geographers extended it quite round the Globe to 360, or to the Meridian from whence it began. This Method was continued for some Time, till, at last, the *French* thought proper to change the Meridian, and make Use of that of *Fero*, which lies two Degrees to the Westward of *Teneriffe*. This Innovation made Room for others, so that it is the Custom at present for every Geographer to begin his Longitude at the Meridian passing through the capital Place of his Country; and accordingly the *English* make that of *London* the first Meridian, and reckon East or West, according as the Place is situated on the East or West Side of the Meridian of *London*.

Of the natural Division of the Earth.

NATURE has divided the terraqueous Globe into Continents, Ocean, Islands, Seas, Lakes, Rivers, Mountains, &c.

A *Continent* is a large Tract of Land comprehending several Countries, Kingdoms, States, &c. without being separated by Water. Thus *Europe*, *Asia*, and *Africa* form one large Continent, and *America* another; though Geographers generally reckon four Continents, *Europe*, *Asia*, *Africa*, and *America*.

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An *Island* is a Tract of Land incompassed with Water; as *Great Britain, Ireland, &c.*

An *Archipelago* is a Cluster of small Islands lying near each other; as those in the *Ægean Sea*, between the Coasts of *Greece* and *Asia*.

A *Peninsula* is a Tract of Land incompassed by Water, except a narrow Neck which joins it to the Continent; as the *Morea* in *Greece*.

An *Isthmus* is a narrow Neck of Land joining a Peninsula to the Continent; as the *Isthmus* of *Darian*, which joins *North* and *South America*; and that of *Corinth*, which joins the *Morea* to *Greece*.

A *Mountain* is a Part of the Land more elevated than the rest of the adjacent Country, whereby it is seen at a great Distance from the lower Lands.

A *Promontory* is a Mountain stretching itself into the Sea, the Extremity of which is called a *Cape* or *Head-Land*.

An *Ocean* is a vast Collection of salt Water, separating the Continents from one another, and washing their Borders or Shores. Geographers generally reckon five Oceans, namely, the *Northern*, the *Atlantic*, the *Pacific*, the *Indian*, and the *Southern*.

The *Northern Ocean* stretches to the Northward of *Europe*, *Asia*, and *America*, towards the North Pole.

The *Atlantic Ocean* is bounded by the Continents of *Europe* and *Africa* on the East, and by *America* on the West. It is usually divided into two Parts, one called the *North Atlantic*, or *Western Ocean*; and the other the *South Atlantic*, or *Ethiopic Ocean*.

The *Pacific Ocean*, or, as it is sometimes called, the *South Sea*, is bounded by *America* on the East, and by *Asia* on the West.

The *Indian Ocean* washes the the Shores of the eastern Coasts of *Africa*, and the southern Coasts of *Asia*, and is bounded on the East by the *Indian Islands*, and the southern Continent.

The *Southern Ocean* extends to the Southward of *Africa* and *America*, towards the South Pole.

A *Sea* is a Branch of the Ocean flowing between some Parts of the Continent, or separating an Island from the Continent; as the *Mediterranean Sea*, the *Baltic Sea*, the *Red Sea*, the *Caspian Sea*, &c.

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A *Gulph*, or *Bay*, is a Part of the Ocean or Sea contained between two Coasts, and every-where environed by Land, except the Entrance, where it communicates with other Bays, Seas, or Oceans; as the Gulph of *Venice*, the Gulph of *Bothnia*, the Bay of *Bengal*, the Bay of *Biscay*, &c.

A *Streight* is a narrow Passage, by which there is a Communication between a Gulph and it's neighbouring Sea, or connecting one part of the Sea, or Ocean, with another, as the Streight of *Gibraltar*, which joins the *Mediterranean Sea* to the *Atlantic Ocean*; the Streight of *Magellan*, which joins the *Southern* and *Pacific Oceans*.

An *Harbour* is generally at the Bottom of a Bay, or the Mouth of a River, and has it's Name from it's being a convenient Place for Shipping to lie secure from Storms.

A *Lake* is a Collection of Waters contained in a Valley, or Cavity in an inland Place, of a considerable Extent, and every-where surrounded by Land; having no visible Communication with any Sea or Ocean.

A *River* is a Stream of Water flowing generally from the Mountains in a long narrow Channel or Cavity, through the Land, till it falls into the Sea, or some other River.

A *Cataract* is a large Fall of Water over a Precipice formed in the Bed of a River, whereby the Navigation of the River is stopped.

Of the Political Division of the Earth.

BY the political Division we mean the different Countries, Empires, Kingdoms, States, and other Denominations established by Men, either for the Sake of good Government, or to satisfy the Ambition of Tyrants.

1. Of EUROPE.

Europe is bounded on the North by the *Frozen Ocean*, on the South by the *Mediterranean Sea* which divides it from *Africa*; on the East by *Asia*, from which it is parted by the *Archipelago*, the *Euxine* or *Black Sea*, and the *Paulus Mæotis*, and thence by a Line drawn from the River *Tanaïs* or *Don*, almost to the River *Obey* in *Muscovy*; and

and on the West it is bounded by the *Atlantic Ocean*. It is about 3000 Miles long from N. E. to S. W. and about 2500 in Breadth.

It is by far the least of the four Quarters of the Globe, but preferable to any of the rest for the Mildness of its Air, the Fertility of its Soil, the many navigable Rivers with which it is watered, the great Plenty of Cattle, Corn, Wine, Oil, and Fruits, it produces, not only for the Sustenance, but even for the Luxury of Human Life; especially for the Beauty, Strength, Courage, Ingenuity, and Learning, of its Inhabitants; the Excellency of their Governments, the Equity of their Laws, the Freedom of their Subjects, and, which surpasses all the Rest, the Sanctity of their Religion.

Europe was peopled, soon after the Flood, by the Posterity of *Japhet*, who passed from *Asia Minor*, over *Hellepont*, into *Greece*; and it has, for many Years, been exceedingly populous, and its Inhabitants famous for their Courage, Wisdom, and Virtue; by which they conquered the greatest Part of *Asia* and *Africa*, and subjected them to the two celebrated Empires of *Greece* and *Rome*: And in later Ages almost one Half of the Earth, which was formerly unknown, has been discovered by *Europeans*, and possessed by Colonies they have sent thither.

The *Christian* Religion is professed throughout all *Europe*, except that Part of it possessed by the *Turks*. But, by Reason of the Innovations made by the Church of *Rome*, the western Church is divided: *Italy*, *Spain*, *Portugal*, *France*, Part of *Germany*, the *Netherlands*, and *Poland*, still following the Doctrine of the *Roman Church*; whereas *England*, *Scotland*, *Ireland*, *Denmark*, *Sweden*, *Norway*, great Part of *Germany*, the *United-Provinces*, *Switzerland*, &c. have embraced the *Protestant* or *Reformed Religion*; while *Muscovy*, some Parts of *Poland*, *Walachia*, *Moldavia*, *Podolia*, *Volhinia*, and *Greece*, follow the Doctrine of the *Eastern* or *Greek Church*.

The *Europeans* have been long celebrated for Arts and Learning. They have carried the scholastic Sciences to a much greater Degree of Perfection than either the *Asiatics* or *Africans* were ever able to do: And the Invention and Improvement of many useful Arts, particularly Navigation, is wholly owing to the Genius and Industry of the Inhabitants of this Division of the Globe.

The Languages of *Europe* are all derived from these seven original Ones, namely, the *Hebrew*, *Greek*, *Latin*, *Teutonic* or *Old German*, *Celtic*, *Sclavonic*, and *Gothic*; the different Dialects whereof, with some accidental Additions, being the Languages of all the considerable Parts of *Europe*, except *Turky* and *Tartary*.

The Dominions of *Europe* are chiefly Monarchical, but far more easy and gentle than those of *Asia* and *Africa*. It contains three Empires, namely, those of *Germany*, *Russia*, and *Turky*: Twelve Kingdoms, viz. *Great Britain* and *Ireland*, *France*, *Spain*, *Portugal*, *Sweden*, *Denmark*, *Poland*, *Hungary*, *Bohemia*, *Prussia*, *Sardinia*, and *Naples* and *Sicily*, generally called the two *Sicilies*; together with the Poppedom of *Rome*. The Republics are eight in Number, namely, that of *Venice*, the *United Netherlands*, *Switzerland*, the *Grisons*, *Genoa*, *Lucca*, *Geneva*, and *Ragusa*. Next to these may be reckoned the Electorates of *Germany*, whose Princes chuse the Emperor; three of these are spiritual, viz. the Archbishoprics of *Mentz*, *Triers*, and *Cologn*; and all the others Temporal, namely, *Bavaria*, *Saxony*, *Brandenburgh*, the *Palatinate*, and *Brunswic Lunenburg*. Besides these there are no less than three Hundred Sovereignities in *Germany*, *Italy*, &c. whose Possessors, whether Spiritual or Temporal, have Authority in their own Estates, though they are Tributaries, or Fieftees, to the Emperor. There are also the Cham of *European Tartary*, the Hospodars of *Walachia*, *Moldavia*, &c.

2. Of A S I A.

Asia may be justly considered as one of the finest Parts of the Globe, and has been blessed with many very singular Advantages. It was in *Asia* that *Omnipotence* planted the delicious Garden of *Eden*, in which he placed the first Parents of the human Race. And, after the Sins of Mankind had provoked the *Almighty* to destroy them by a Deluge of Water, *Asia* became a second Time the Nursery of the World: Here the Family of *Noah* settled, and from hence various Colonies were sent into the other Parts of the Globe. It was in *Asia* that God made Choice of the fertile *Canaan*, as an Habitation for his favourite People the *Hebrews*. It was here that the tremendous

Work

Work of our Redemption was performed by the great *Messiah*; and from hence the Light of the glorious Gospel was spread into all Nations by his Disciples and Followers. Here the first *Christian* Church was founded, the first Council held, the first Bishopric erected, and the *Christian* Faith miraculously founded, promulgated, and watered with the Blood of innumerable Martyrs. *Lastly*, It was in *Asia* that the first Edifice was erected, the first City built, and the first Kingdom founded; while the other Parts of the Earth were wholly destitute of Inhabitants, or, at least, inhabited only by wild Beasts.

It is also remarkable for the Richness and Fertility of it's Soil, the Serenity of it's Air, the Deliciousness of it's Fruits, the Sclubrity of it's Drugs, the Fragrancy and balsamic Quality of it's Plants, Spices, Gums, &c. the Quantity, Variety, Beauty, and Value of it's Gems, and the Fineness of it's Silks, Cottons, &c. In short, it has always been esteemed so delicious an Abode, that it was for many Ages the Seat of the greatest Monarchies in the World. Indeed, since the *Turkish* Tyranny has been spread over so large a Part, *Asia* is greatly fallen from it's original Splendor, and affords us a melancholy Instance of the Instability of human Greatness; for the most polite and fruitful Spot in all *Asia* is become a wild uncultivated Desert; it's beautiful Structures are destroyed, and it's splendid Monuments blended with the Dust. The populous Cities of *Nineveh* and *Babylon*, so long famous for their Beauty and Grandeur, are no more, and the Places where they stood, inhabited by Serpents and Beasts of Prey. The Cities of *Ephesus*, *Balbeck*, *Palmyra*, *Tyre*, and *Jerusalem*, exhibit only the Vestiges of their ancient Grandeur, and meagre Poverty has filled the Palaces where splendid Opulence once resided. But those Parts which have escaped the *Turkish* Tyranny are still in a flourishing Condition; but rather from the Richness of the Soil than the Industry of their Inhabitants who are justly reproached for their natural Indolence, Effeminacy, and Luxury.

Perhaps this Effeminacy is principally owing to the Warmth of their Climate, but heightened by Custom and Education; and this seems, in some Measure, confirmed by those *Asiatics* who live nearly in the same Latitude with us, and who are found not to be deficient in
Strength

Strength, Activity, and Courage. Whether the Reflection generally cast on the *Asiaties*, that they are naturally fordid Admirers of Monarchy, be altogether just, we shall not pretend to determine; perhaps their Princes have always kept them in such abject Slavery and Subjection, that they never had an Opportunity of displaying their Love of Liberty, which we must otherwise suppose to be as natural to them as to the rest of Mankind. Thus much however is certain, that many of the Nations in the eastern Parts of *Asia* were astonished when the *Dutch* first settled among them, being unable to conceive how it was possible for any People to live under a republican Government, or indeed under any other Form than that of a despotic Monarchy, the only one known through all the Parts of that vast Country.

With Regard to Religion they are still more stupid, a great Part of *Asia* being over-run with *Mahomedism*; as *Turky*, *Arabia*, Part of *Tartary*, and *India*: In *Persia*, and the Empire of *Indestan*, they profess the same Religion, but are of a different sect, viz. that of *Heli*, which differs, in some Particulars, from that of the *Turks*, though both own *Mohammed* for their Lawgiver, and the *Koran* for their Rule of Faith and Practice. In other Parts of *Tartary*, in *China*, *Japan*, *Siam*, &c. they are in general *Heathens* and *Idolaters*, have strange Notions of the Deity, or rather of their Deities, and use the most extravagant Rites in the Worship of them; but it must be observed, that this Multiplicity of Idols and strange superstitious Ceremonies are regarded by the Vulgar only; Persons of Learning have Sense enough to despise them, though for political Reasons they keep their Opinions to themselves.

Besides these, there are several Sects of the ancient *Persees*, or Followers of the great *Zoroaster*, dispersed all over *India*, and other Parts of *Asia*, who acknowledge but one supreme Deity, and are distinguished by the Title of *Fire Worshipers*, because they worship the great Creator under the Symbol of the Element of Fire. These are sworn Enemies to all Kinds of Idolatry, Images, Temples, &c. which they look upon as derogatory to the supreme Being, who neither can nor ought to be either represented by Images, or confined in Temples. These lead a very contemplative Life, feed only on Vegetables,
are

are very humane, and so far from killing any living Creature, that they build Hospitals for the Maintenance of such as are rendered incapable, either by Age, Accident, or any Infirmities, of providing for themselves.

We have already observed that the Gospel was first planted in *Asia*, and shone there for many Years with distinguished Lustre; but Vice and Immorality at last prevailed, till an Inundation of the northern *Barbarians*, *Saracens*, *Tartars*, and *Turks*, laid the Country waste, and overwhelmed it with Misery and Oppression.

Asia is bounded on the West by the *Black* and *Mediterranean Seas*; on the South and East by the *Indian* and *Chinese Oceans*; on the North by the *Frozen Sea*, and on the South by the *Red Sea*, which divides it from *Africa*, so that every Side of it is, in some Parts, washed by the Sea; but how far it extends to the North is not yet known, though the *Russians* have made several Attempts for that Purpose. It comprehends a vast Number of Monarchies or sovereign States, amounting to Forty-two, four of which are Empires; as those of *Persia*, *Indostan*, or the *Great Mogul*, *China*, and *Japan*; besides Part of two more, namely, *Turky* and *Muscovy*.

It would seem an endless Task to enumerate the different Tongues and Dialects spoken among such a Variety of Nations; and yet it may be said in general, that *Asia* hath by far the fewest of any Part of the World; chiefly owing to the vast Empires it contains, where an Uniformity of Language is endeavoured to be introduced among their Subjects. The principal Languages of *Asia* are the *Arabic*, *Persian*, *Tartaric*, *Chinese*, *Japanese*, *Malayan*, and *Malabaric*.

The Climates are also very various, as *Asia* extends itself from the Equator to the polar Circle, and perhaps even to the Pole itself; so that a Detail of them, as well as the peculiar Products of each, would require much more Room than we can spare. We shall therefore only observe, that, though *Asia* enjoys no less than twenty-four Climates, yet, if we except some Parts of *Arabia* and *Tartary*, together with the Tracts in it's northern Extremity, the whole Country, which may be computed at 6000 Miles, is rich and fruitful, and some Parts of it remarkably so.

3. OF AFRICA.

Africa is the third Part of the known and inhabited World. The Ancients gave it this Rank, and the Moderns still retain it, notwithstanding the Discovery of *America*, which is far superior to it, either with Regard to Extent, Wealth, or Salubrity. The Ancients, who knew but very little of *Africa*, looked upon the greatest Part of it as a Desert and uninhabited; and though we are much better acquainted with it, yet our Knowledge extends little farther than the Coasts, unless along the *Mediterranean*, which, being more fruitful in Corn and other Productions, and, at the same Time, more easy of Access, have been more constantly visited both by *Asiatics* and *Europeans*. As for the midland Parts, they have, on Account of their intolerable Heat, and the savage Nature of their Inhabitants, been little visited by any Strangers. Even the southern Parts of it, which lie under a more temperate Climate, and are much easier of Access, are found inhabited by such a barbarous People, so fierce and savage in their Nature, so uncouth and forbidding in their Manners and Language, and so shy of all Intercourse with foreign Nations, that it is no Wonder we are still as ignorant of them as of the midland Part.

This vast Tract of Land has it's Name from one of it's ancient Provinces, which we now call *Africa Proper*, and extends itself along the *Mediterranean*, from the ancient *Mauritania* on the West, to *Cyrenaica* on the East, where the Kingdom of *Tunis* is now situated, and was once the Seat of the famous *Carthaginians*. The ancient *Greeks* called it *Lybia*, from another of it's Provinces, whose desert Part bordered on *Ægypt*, and was called by the ancient *Arabians* *El bar*, a divided or forsaken Land.

The Continent of *Africa* lies on the South of *Europe*, and on the West of *Asia*; and is bounded on the North by the *Mediterranean*, which separates it from the former, and by the *Red Sea* on the East, which divides it from the latter, to which it is only joined by a small Neck of Land, called the Isthmus of *Suez*: On the South and West it is bounded by the Ocean, so that it may be styled a vast Peninsula, joined to the Continent of *Asia* by

by the small Isthmus above-mentioned. It extends a very considerable Distance beyond each Tropic, the southern Point of it lying nearly in the 35th Degree of South Latitude, and the Northern in the 37th of North Latitude: So that it's Extent from North to South is almost 4320 Miles; and from East to West 4620.

Most of the Parts of *Africa* are inhabited, though not in the Proportion of those of *Europe* and *Asia*, occasioned by the Barrenness of prodigious Tracts of Land, and the Variety of wild and voracious Beasts, which infest it, such as Lions, Tygers, Leopards, Panthers, Hienas, Rhinoceroses, Elephants, wild Asses, and an amazing Number of Serpents and other venomous Reptiles. It must not, however, be supposed, that *Africa* breeds only such noxious Creatures, for it produces great Numbers of those we call domestic Animals, though they run wild here, as Camels, Dromedaries, Horses, Buffaloes, Deer, Hogs, &c. besides a great many others peculiar to that Country. Another Cause of it's being so thinly peopled is, that many of it's Provinces are inhabited by Savages, who are continually at War with each other, and sell their Prisoners for Slaves. The horrid Tyranny of most of their Governments, their bloody Battles, Manner of Fighting, their rambling Life, Polygamy, Effeminacy, and Indolence, are also great Obstacles to their Increase. Add to these the Heat of the Climate, and the Deserts of burning Sands so frequent in this Country, and we shall not be surprized to find large Tracts of Land without Inhabitants.

But these Observations relate chiefly to the midland Parts; for the Coasts being less subject to the above Inconveniences, and, at the same Time, better watered, and cooled by Breezes from the Sea, are much better peopled and cultivated, as well as more healthy and fruitful; especially in *Agypt* and *Barbary*, where in some Places the Corn-fields yield an hundred fold, and the Stocks of the Vines are equal to large Trees.

Africa produces Variety of excellent Fruits, Plants, and Drugs, both for Food and Physic. The Cattle are of a large Size, very fat, and the Flesh very delicious; and the Horses, especially those of *Barbary*, are highly esteemed for their Beauty and Fleetness.

The People of *Africa* are divided into Whites and Blacks, though the former are rather of a tawny and swarthy

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Complexion. They are generally tall, stout, and strong, but not near so good Soldiers as those of *Europe* and *Asia*. They are a Kind of Mixture of native *Africans* and *Arabs*, and are naturally fierce, cruel, and brutal, and the best of them ignorant and unpolite; owing to their bad Education, and the detestable Maxims of their several Governments: For it is well known, that *Africa* has produced some of the best Generals, Soldiers, Politicians, and Divines, witness the great Captains *Asdrubal*, *Hanno*, and *Hannibal*; the Fathers *Cyprian*, *Augustine*, and *Tertullian*; with a great Number of other famous Persons, especially among the ancient *Egyptians*, whose Country was once esteemed the Seat and Fountain of Learning. But these Rays of Wisdom and Knowledge have been long since extinguished by a Deluge of Ignorance and Vice; so that at present, a very small Part excepted, the whole Country may be considered as a Nest of *Barbarians*. Some of them live in Cities, but the much greater Part in Huts and Tents, have no settled Habitation, but wander about from Place to Place in Search of Subsistence for themselves and Pasture for their Flocks.

As to their Religion, many of them have embraced that of *Mohammed*; but the far greater Part of them are *Pagans*. The Light of the Gospel indeed shone here once with distinguished Lustre; but it is now hardly seen, a few *Christians* of the *Greek Church*, and a small Number of *Europeans* settled in this Country, being the only Followers of that unerring Guide. In short, Barbarism and Infidelity, Ignorance and Vice, Effeminacy and Brutality, have overspread this large Country.

4. *Of AMERICA.*

We are now come to speak of the fourth Division of the Globe, and which, though much larger than either of the rest, was unknown to the Ancients. *Christopher Columbus*, a Native of *Genoa*, discovered it in the Year 1492; though it has its Name from *Americus Vesputius*, who afterwards made some Discoveries in the new World.

This vast Continent, which is almost equal to the other three, is of such prodigious Extent, that its Limits

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mits towards the North and North West are not yet discovered. We know, however, that it extends from 78 Degrees of North, to 55 Degrees of South Latitude; but it's Breadth is very unequal, being in some Places above 3690 Miles, and in others not above 60 or 70.

A Country of such vast Extent, not only on each Side of the Equator, but extending so far beyond each of the Tropics, must of Consequence abound with as great a Variety of Soils as of Climates: But, upon the Whole, if we except the northern and southern Extremities, which are here, as they are every-where else in the same Latitudes, cold and barren, we may consider the new World as an immense Treasury of Nature, producing most, if not all the Plants, Grains, Fruits, Trees, Woods, Metals, Minerals, &c. found in the other Parts of the World; and some of them in much greater Perfection: Besides which it has an amazing Variety of others peculiar to itself. But what has rendered it still more famous, is the prodigious Number of Mines of Gold and Silver, which may be considered as absolutely inexhaustible by the Labours of Men.

Gold and Silver however are far from being the only precious Commodities that this Country produces, for Pearls, Emeralds, Amethysts, Diamonds, and other precious Stones, abound here, and have been sent from thence into *Europe*. To these we may add a vast Number of other Commodities, which, though inferior in Price, are far more valuable and useful. Of this Kind are the constant and plentiful Supplies of Cochineal, Indigo, Anatto, Logwood, Brazil, Fustic, Lignum Vitæ, Cedar, Sugar, Ginger, Pimento, Cacao, Banillas, Cotton, Red Wool, Tobacco, Hides, Ambergrise, Balsams of *Tolu* and *Peru*, Jesuit's Bark, Mechoacan, Sassafras, Sarsaparilla, Cassia, Tamarinds, and a great Variety of other Woods, Plants, &c. to which we were either Strangers before the Discovery of *America*, or forced to purchase them at extravagant Rates from *Asia* and *Africa*. We might also mention a great Variety of excellent Fruits which grow here in the utmost Plenty and Perfection, such as Pine-Apples, Pomegranates, Citrons, Lemons, Oranges, Cherries, Apricots, Peaches, Apples, Figs, and such a vast Variety of others, as would be tedious

tedious to enumerate. Add to all these the amazing Fertility of the Soil, which nourishes all Kinds of Plants, whether native or exotic.

Yet, with all this amazing Plenty and Variety, the new World laboured under the Want of many very necessary and useful Commodities: For when the *Europeans* first landed in *America*, they found neither Corn, Wine, nor Oil; the Inhabitants making their Bread of some Kind of Pulse or Roots. Their Drink was little superior to Water, and, as for Money, they knew not the Use of it. There were neither Horses, Asses, black Cattle, Sheep, nor Goats, though the Country abounded with the richest Pastures. But all these have long since been carried thither, where they have increased in so remarkable a Manner, especially the black Cattle, that a very large Trade has been long carried on with their Hides and Tallow only.

When, or by whom, this prodigious Continent was first peopled, cannot now be certainly known; the Inhabitants having no Records, and their Traditions imperfect and uncertain. Some have imagined that the Country might have been peopled from Colonies sent hither from some Parts of *Africa* or *Asia*; but several unformountable Difficulties attend this Hypothesis. It is therefore more reasonable to suppose, that *America* was originally peopled from the northern Parts of *Tartary*, which are at no great Distance from those of *America*; and the *Russians* have lately discovered, that some Part of *Kamtebata* is now at no great Distance from *America*, and there are strong Reasons to think that they once joined to each other; and the Inhabitants of both Shores resemble each other in so many Particulars, that there is the greatest Reason to think they came originally from the same Stock.

But, however this be, the Natives of *America* now differ so much from each other, according to their various Climates, Soils, Laws, and Governments, that no general Account can extend to all. This much, however, may be said of them, that they ingenious, stout, and active; but, at the same Time, they are naturally passionate, revengeful, savage, and cruel; especially those who have not been civilized by a Commerce with the *Europeans*. Perhaps the cruel Treatment they met with from the *Spaniards*

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niards has greatly tended to inflame their Passions, and to fill their Breasts with a Desire of Revenge. For it should be remembered, that though the *Indians* in some Parts of *America* lived in a State of Anarchy, carried on the most cruel Wars, and practised the most hellish Cruelties on one another, yet there were also several very large, polite, and well-governed Empires among them, especially those of *Mexico* and *Peru*, which abounded with large and stately Cities, Palaces, Temples, and other magnificent Structures. There was also one Commonwealth, called *Tlascala*, which was well civilized, regulated, and governed.

The generality of *Americans*, especially of the lower Rank, and who inhabit the Torrid Zone, go almost naked, wearing only a Kind of short Petticoat reaching from the Waist to the Knees, made either of the Skins of Beasts, some light Stuffs of their own weaving, or the Feathers of Birds, in the joining and mixing of which they are surprizingly expert. Those who inhabit the Parts of *North-America* wear a coarse Blanket, which they purchase from us; and the whole Fashion of their Lives is of a Piece, hardy, poor, and squalid; and their Education, from their Infancy, is solely directed to form their Minds to inflict and endure the greatest Evils. Their only Occupations are Hunting and War: They leave Agriculture to the Women, and look on Commerce with Contempt. When their hunting Season is over, and Provisions laid up for the ensuing Season, they spend their whole Time in Sloth and Indolence. They sleep half the Day in their Huts, and pass the Remainder in loitering and jesting among their Friends; and in eating and drinking they observe no Bounds of Decency. Spirituous Liquors were unknown among them till we planted Colonies in *America*, but they are now the Spur of their Industry, and the Enjoyment of their Repose: To acquire these Liquors they will endure the greatest Hardships, and expose themselves to the greatest Dangers. In short, their Excess in Drinking, when they can procure spirituous Liquor, is astonishing, and may be justly considered as a public Calamity.

With regard to Religion, the *Americans* have very little among them; and some have no Idea of a Power that governs the Universe. Others entertain better Notions, believing

believing the Existence of a supreme Being, eternal and incorruptible, who made and governs all Things here below. But they are satisfied with owning this, which is traditionary in the Country, for they pay him no Kind of Worship. Some, indeed, among them, seem to adore the Sun and Moon; and all of them have a No ion of invifible Beings, that intermeddle with the Affairs of Mortals. There is, however, some Reason to think, that they had once a more regular Form of religious Worship, for they still make a Kind of Oblation of their firft Fruits; obferve certain Ceremonies at the full Moon, and have many Things in their Festivals, which, in all Probability, came from a religious Origin, though they perform them as Things handed down to them from their Anceftors, without knowing or inquiring about the Reasons on which they are founded.

But, though deftitute of Religion, they are remarkably fuperftitious; great Obfervers of Dreams and Omens, and eagerly fond of prying into Futurity. It is therefore no Wonder that they abound in Diviners, Augurs, and Magicians, and rely on their Predictions in all Affairs that concern them, whether of Health, War, or Hunting. And their Phyfic is intirely in the Hands of thefe Jugglers, who generally treat their Patients, be their Diforders what they will, in the fame Manner, which is this: They inclofe them in a narrow Cabbin, having, in the Midft of it a red-hot Stone, on which they continue to pour Water, till the Patient is well soaked with warm Vapour and his own Sweat; when they hurry him from this Kind of Bagnio, and plunge him fuddenly into the River, on the Banks of which the hut is always erected. This is repeated as often as they judge it neceffary, and by this Method extraordinary Cures have been fometimes effected: But it muft be alfo remembered, that it likewise frequently kills the Patient in the very Operation; and this is one Reason why the Small-Pox is always more fatal to them than to us. It muft however be owned, that they are poffeffed of fome Species of amazing Efficacy, but attribute their Virtues to the magical Ceremonies with which they are constantly adminiftered.

As in the Difcovery of the new World the Spaniards were the firft, fo they are alfo in Poffeffion of far the largeft, and, in fome Senfe, the richeft, Part of it. The

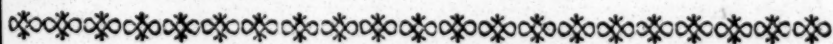
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rest of the trading Nations of *Europe* did not, however, stand idle Spectators of their new Acquisitions and Conquests, but endeavoured to share in the Discovery. Accordingly, the *Portuguese* made themselves Masters of *Brazil*, a large Country, stretching along the eastern Shore of *South America*; while the *English* possessed themselves of the Coasts of *Virginia*, *Maryland*, *Carolina*, *New England*, and other northern Provinces: together with the Islands of *Jamaica*, *Barbadoes*, and others of less Note. The *French* also gained a considerable Tract of Land along the River of *Canada*, which has since given Name to all their Conquests; but this extensive Country is now fallen into our Hands. It could hardly be expected that the *Dutch* would see so fine a Country divided among their Neighbours without coming in for some Share; accordingly they are settled at *Surinam*, on the Continent of *South America*, and several small Islands, where they carry on so advantageous a Commerce with the *Spaniards* and Natives, that the Company is far the richest they have in *Holland*.

Thus we have given a short Account of the terraqueous Globe, which Providence has allotted for our Habitation, and shall conclude with observing, that there is Room sufficient for the whole human Race to live in Ease and Plenty; but Ambition, that Passion so destructive to Mankind, excites Nations to make War on one another, to the Ruin and Destruction of a great Part of the Species.



Of INTEREST.

INTEREST is the Premium or Money paid for the Loan or Use of Money; and is distinguished into two Kinds, simple and compound.

Simple Interest, which is the only Interest allowed of by our Laws, is that which is paid for the Principal, or Sum lent, at a certain Rate or Allowance by the Year, as two, three, four, or five *per Cent.* and in Proportion for greater or lesser Sums, and for more or less Time. For Instance, if the Rate be five *per Cent.* then the Interest of an hundred Pounds, for six Months, is two Pounds ten Shillings;
for

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for three Months, one Pound five Shillings; and for eighteen Months, seven Pounds, ten Shillings. Hence it follows, that the common Questions of simple Interest will have Relation to these four Things, *namely*, any principal Sum, it's Interest, the Time in which it gives that Interest, and the Rate, according to which that Principal, Interest, and Time, are adjusted to one another. Consequently, the whole Doctrine of simple Interest is contained in the four following Problems;

Problem 1. Having any principal Sum, and Time, with the Rate of Interest given, to find the Interest of that Sum for that Time and Rate.

Example 1. What will the Interest of 1000*l.* amount to in 3 Years and a Half, at 5*l.* per Cent. per Annum?

This Question is easily solved by two Operations of the Rule of Three, in the following Manner:

First say, If 100*l.* require 5*l.* Interest, what will 1000*l.* require?

$$\begin{array}{r} 100 : 5 : 1000 \\ \quad \quad \quad 5 \\ \hline 100) 5000 \end{array}$$

Answer 50*l.*

Then, having found the Interest of the Principal for one Year, find what it will amount to in three Years and a Half, in the following Manner:

If 12 Months, or 1 Year, require 50*l.* what will 42 Months, or 3 Years and a Half, require?

$$\begin{array}{r} 12 : 50 : 42 \\ \quad \quad \quad 50 \\ \hline 12) 2100 \text{ (175*l.* Answer.} \\ \quad 12 \\ \hline \quad \quad 40 \\ \quad \quad 84 \\ \hline \quad \quad \quad 60 \\ \quad \quad \quad 60 \\ \hline \end{array}$$

Example

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Example 2. *What is the Interest of 740l. for 9 Months.*
at 6½ per Cent. per Annum?

First, *If 100l. require 6l. 10s. what will 740l. require?*

$$\begin{array}{r} 20 \\ \hline 130 \\ \hline \end{array} \qquad \begin{array}{r} 130 \\ \hline 22200 \\ 740 \\ \hline \end{array}$$

100) 962100 (962s.

Then, *If 12 Mon. require 962s. what will 9 Mon. require?*

$$\begin{array}{r} 9 \\ \hline 12) 8658 \quad (721 \quad (36l. \quad 1s. \quad 6d. \\ 84 \quad 60 \\ \hline 25 \quad 121 \\ 24 \quad 120 \\ \hline 18 \quad 1 \\ 12 \\ \hline 6 \end{array}$$

Answer 36l. 1s. 6d.

Problem 2. Having the Rate, Principal, and Interest,
to find the Time.

Example. *Suppose I receive 170l. for the Interest of*
1000l. at the Rate of 5l. per Cent per Annum, how long
was the said Sum at Interest?

First, *If 100l. require 5l. what will 1000l. require?*

$$\begin{array}{r} 5 \\ \hline 100) 5000 (50l. \\ \hline \end{array}$$

Then, *If 50l. require 12 Months, what will 172l. require?*

$$\begin{array}{r} 12 \\ \hline 50) 2100 (42 \\ 20 \\ \hline 10 \\ 10 \\ \hline \end{array}$$

Answer 42 Months, or $3\frac{1}{2}$ Years.

Problem

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Problem 3. Having the Principal, Interest, and Time given, to find the Rate.

Example. Suppose I have 1200l. at Interest, and at the End of 3 Years I receive 144l. at what Rate was that Sum put out to Interest?

First, If 3 Years require 144l. what will 1 Year require?

$$\begin{array}{r} 3 \overline{) 144} \quad (48 \\ \underline{12} \\ 24 \\ \underline{24} \end{array}$$

Then, If 1200l. require 48l. what will 100l. require?

$$\begin{array}{r} 100 \\ 12 \overline{) 48} \quad (4 \\ \underline{48} \end{array}$$

Answer at 4 per Cent. per Annum.

Problem 4. Having the Rate, Time, and Interest given, to find the Principal.

Example. Suppose I have a certain Sum of Money at 4 per Cent. Interest, and at the End of 2 Years I receive 135l. 15s. 2d. for the Interest, what is the Principal?

First, If 2 Years require 135l. 15s. 2d. what will 1 Year require?

$$\begin{array}{r} 20 \\ \hline 2715 \\ \underline{12} \\ 5432 \\ \underline{2715} \\ 2715 \end{array}$$

	12	20
2) 32582	(16291	(1357(67l. 17s. 7d.
<u>2</u>	<u>12</u>	<u>120</u>
12	42	157
<u>12</u>	<u>36</u>	<u>140</u>
5	69	17
<u>4</u>	<u>60</u>	
18	91	
<u>18</u>	<u>84</u>	
2	7	
<u>2</u>		

Then

Now, If 4l. req. 100l. wh. will 67l. 17s. 7d. require?

20	20	20
80	2000	1357
12	12	12
960	24000	2721
		1357
		16291
		24000
		65164000
		32582

	12	20
96 0 39098400 0	407275	(33939 1500)
384	36	20
698	47	119
672	36	100
264	112	100
192	108	180
720	47	139
672	36	120
480	115	19
480	108	



Answer 1596l. 19s. 7d.

7

Thus have we shewn the Method of solving all the Cases relating to simple Interest; but the first Problem is by far the most useful, and indeed, almost the only one that is ever wanted: We have, therefore, in order to save the Trouble of computing the Interest for any Sum of Money, added Tables for 1, 3, 6, 9, and 12 Months, at the Rate of 2, 2½, 3, 3½, 4, 4½, 5, and 6 per Cent. being all the usual Rates given for the Loan of Money: For the Law will not suffer any Person to take above 6 per Cent. per Annum; and few will chuse to lend Money at less than 2. These Tables, therefore, will serve all the Purposes of computing the Interest for any Sum of Money, and for any given Time.

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TABLES

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24

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$$\begin{array}{r} 20 \\ \hline 2715 \\ \underline{12} \\ \hline 5432 \\ 2715 \\ \hline \end{array} \quad \begin{array}{r} 12 \\ \hline 12 \\ \hline 42 \\ \underline{36} \\ 69 \\ \underline{60} \\ 91 \\ \underline{84} \\ 7 \end{array} \quad \begin{array}{r} 20 \\ \hline 120 \\ \hline 157 \\ \underline{140} \\ 17 \end{array}$$

Then

Ques. If 4l. req. 100l. wh. will 67l. 17s. 7d. require?

20	20	20
80	2000	1357
12	12	12
960	24000	2721
		1357
		16291
		24000
		65164000
		32582

96 0	39098400 0	12	20
384	36	20	
698	47	119	
672	36	100	
264	112	10	
192	108	180	
720	47	139	
672	36	120	
480	115	19	
480	108		



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TABLES

TABLES of INTEREST, at 2, 2½, 3, 3½, 4, 4½, 5, and 6 per Cent. per Annum For One MONTH.

£ at	2 per Cent.			2½ per Cent.			3 per Cent.			3½ per Cent.			4 per Cent.			4½ per Cent.			5 per Cent.			6 per Cent.		
	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.	l.	s.	d.
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1000	1	13	4	2	1	8	2	10	0	2	18	4	3	6	8	3	15	0	4	3	4	5	0	0

For Six MONTHS.

£ at	2 per Cent.			2½ per Cent.			3 per Cent.			3½ per Cent.			4 per Cent.			4½ per Cent.			5 per Cent.			6 per Cent.		
	l.	s.	d. f.	l.	s.	d. f.	l.	s.	d. f.	l.	s.	d. f.	l.	s.	d. f.	l.	s.	d. f.	l.	s.	d. f.	l.	s.	d. f.
1	0	0	2 1	0	0	3 0	0	0	3 2	0	0	4 0	0	0	4 3	0	0	5 1	0	0	6 0	0	0	7 0
2	0	0	4 3	0	0	6 0	0	0	7 3	0	0	8 0	0	0	9 3	0	0	10 6	0	0	12 0	0	0	14 0
3	0	0	7 2	0	0	9 0	0	0	10 1	0	0	12 0	0	0	14 3	0	0	16 6	0	0	18 0	0	0	20 0
4	0	0	10 0	0	0	12 0	0	0	13 6	0	0	16 0	0	0	18 3	0	0	20 6	0	0	24 0	0	0	28 0
5	0	0	12 3	0	0	14 0	0	0	16 2	0	0	19 0	0	0	21 3	0	0	24 6	0	0	28 0	0	0	32 0
6	0	0	14 0	0	0	16 0	0	0	18 1	0	0	21 0	0	0	23 3	0	0	27 6	0	0	32 0	0	0	36 0
7	0	0	17 0	0	0	19 0	0	0	21 6	0	0	25 0	0	0	27 3	0	0	31 6	0	0	36 0	0	0	40 0
8	0	0	19 2	0	0	21 3	0	0	23 8	0	0	27 0	0	0	29 3	0	0	34 6	0	0	40 0	0	0	44 0
9	0	0	21 0	0	0	23 0	0	0	25 1	0	0	29 0	0	0	31 3	0	0	36 6	0	0	44 0	0	0	48 0
10	0	0	23 0	0	0	25 0	0	0	27 6	0	0	31 0	0	0	33 3	0	0	39 6	0	0	48 0	0	0	52 0
20	0	0	46 0	0	0	50 0	0	0	54 0	0	0	62 0	0	0	70 0	0	0	78 0	0	0	96 0	0	0	104 0
30	0	0	69 0	0	0	75 0	0	0	81 0	0	0	90 0	0	0	100 0	0	0	110 0	0	0	128 0	0	0	136 0
40	0	0	92 0	0	0	100 0	0	0	108 0	0	0	120 0	0	0	130 0	0	0	140 0	0	0	160 0	0	0	168 0
50	0	0	115 0	0	0	125 0	0	0	135 0	0	0	150 0	0	0	160 0	0	0	170 0	0	0	192 0	0	0	200 0
60	0	0	138 0	0	0	150 0	0	0	162 0	0	0	180 0	0	0	190 0	0	0	200 0	0	0	224 0	0	0	232 0
70	0	0	161 0	0	0	175 0	0	0	186 0	0	0	210 0	0	0	220 0	0	0	230 0	0	0	256 0	0	0	264 0
80	0	0	184 0	0	0	200 0	0	0	212 0	0	0	240 0	0	0	250 0	0	0	260 0	0	0	288 0	0	0	296 0
90	0	0	207 0	0	0	225 0	0	0	238 0	0	0	270 0	0	0	280 0	0	0	290 0	0	0	312 0	0	0	320 0
100	0	0	230 0	0	0	250 0	0	0	264 0	0	0	300 0	0	0	310 0	0	0	320 0	0	0	336 0	0	0	344 0
200	0	0	460 0	0	0	500 0	0	0	528 0	0	0	600 0	0	0	620 0	0	0	640 0	0	0	672 0	0	0	688 0
300	0	0	690 0	0	0	750 0	0	0	780 0	0	0	900 0	0	0	930 0	0	0	960 0	0	0	1008 0	0	0	1024 0
400	0	0	920 0	0	0	1000 0	0	0	1040 0	0	0	1200 0	0	0	1240 0	0	0	1280 0	0	0	1344 0	0	0	1360 0
500	0	0	1150 0	0	0	1250 0	0	0	1300 0	0	0	1500 0	0	0	1540 0	0	0	1580 0	0	0	1664 0	0	0	1680 0
1000	0	0	2300 0	0	0	2500 0	0	0	2600 0	0	0	3000 0	0	0	3080 0	0	0	3160 0	0	0	3328 0	0	0	3360 0
1000	0	0	2300 0	0	0	2500 0	0	0	2600 0	0	0	3000 0	0	0	3080 0	0	0	3160 0	0	0	3328 0	0	0	3360 0

For Twelve Months.

[illegible]

USE of the foregoing TABLES.

Case 1. IF the Sum and Time employed can be both found in the Tables, look for the Number of Months on the Top of the Table, and for the Rate *per Cent.* at the Head of one of the Columns, then find the Number of Pounds employed in the first Column, and in the common Angle of Meeting is the Interest required.

Example 1.] *What is the Interest of 400l. for 1 Month, at 6 per Cent. per Annum?*

Find one Month at the Top of the Table, 6 *per Cent.* at the Head of one of the Columns, and 400 in the first; and in the common Angle of Meeting is 2l. the Interest required.

Example 2.] *What is the Interest of 300l. for 9 Months, at 4½ per Cent?*

Find 9 Months at the Top, 4½ *per Cent.* at the Head, and 300l. in the first Column; and under 4½ *per Cent.* and against 300l. you will find 10l. 2s. 6d. which is the Interest required.

Case 2.] If the Time cannot be directly found in the Tables, it must be taken out at two or more Operations, and the Sums found added into one total Sum, which will be the Interest required.

Example 1.] *What is the Interest for 400l. for 1 Year and 9 Months, at 3½ per Cent. per Annum?*

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>f.</i>
The Interest of 400l. for 1 Year, at 3½ <i>per Cent.</i> is	14	0	0	0
The Interest of 400l. for 9 Months, at Ditto, is	10	10	0	0
Interest required	24	10	0	0

Example

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Example 2.] *What is the Interest of 400l. for 1 Year and 4 Months, at $4\frac{1}{2}$ per Cent. per Annum?*

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>f.</i>
The Interest of 400l. for 1 Year, at $4\frac{1}{2}$ per C. is	18	0	0	0
Ditto for three Months is - - - - -	4	10	0	0
Ditto for 1 Month is - - - - -	1	10	0	0
Answer £.	24	0	0	0

Case 3.] If the Sum cannot be found in the Tables, the Question must be solved by two or more Operations, and the Results added into one total Sum, which will be the Interest required.

Example 1.] *What is the Interest of 1400l. for 9 Months, at $3\frac{1}{2}$ per Cent. per Annum?*

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>f.</i>
The Interest of 1000l. is - - - - -	26	5	0	0
Ditto of 400l. - - - - -	10	10	0	0
Answer £.	36	15	0	0

Example 2.] *What is the Interest of 1680l. for 6 Months, at 4 per Cent. per Annum?*

	<i>l.</i>	<i>s.</i>	<i>d.</i>	<i>f.</i>
The Interest of 1000l. is - - - - -	20	0	0	0
Ditto of 400l. is - - - - -	8	0	0	0
Ditto of 200l. is - - - - -	4	0	0	0
Ditto of 80l. is - - - - -	1	12	0	0
Answer £.	33	12	0	0

Case 4.] If neither the Sum nor Time can be directly found, you must proceed as in Cases two and three; and the

the Total of all the Operations will be the Interest required.

Example 1.] *What is the Interest of 1500l. for 2 Years and 5 Months, at 6 per Cent. per Annum?*

The Interest of 1000l. for 1 Year is	-	-	-	60	0	0	0
Ditto of Ditto is	-	-	-	-	-	-	60 0 0 0
The Interest of 500l. for 3 Months is	-	-	-	7	10	0	0
Ditto of Ditto for 1 Month is	-	-	-	-	-	2	10 0 0
Ditto	-	-	-	-	-	2	10 0 0

Answer £. 132 10 0 0

Thus will these compendious Tables, with Addition only, answer all the Purposes of the Larger, by solving the practical Questions relating to simple Interest. But, if there are any odd Days, the Interest for those small Parts of Time must be found by the Rule of Proportion, as taught in the first Problem at the Beginning of this Article, and added to the Sum found in the Tables, for the other Parts of the Time the Money has been employed.

F I N I S.



